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THE JOURNAL

OF THE

Michigan State Medical Society

ISSUED MONTHLY UNDER THE DIRECTION OF THE COUNCIL

*M*EDICINE is a profession, but it has a definite artistic side. The Profession can be mastered; the art which surpasses science is taught neither in school nor in laboratory. It often eludes the physician unless he has the germ of it within him. Trousseau called it a gift of heaven, but in reality it is composed of all the qualities that go to the making of a real man: heredity, soil, race, tradition, family, education, and that quality of personality which makes him an entity apart from all other men. It requires, in order to attain full growth, a fine intelligence and a fond heart at the service of science and a fully developed sense of personal self. When the physician has those, he will understand illnesses and their victims.

—From "The Doctor Looks at Marriage and Medicine,"

By Joseph Collins, M. D.



Volume XXVIII

JANUARY, 1929

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A MASTER SURGEON*

FREDERICK A. COLLER, M. D.

ANN ARBOR, MICHIGAN

A surgeon is in the proper sense of the word one who does manual work. The original Greek word from which it is derived was used to designate a cook, a player of the harp, as well as a physician who worked with his hands. Little by little the word lost its vague and general application and in the works of Celsus early in the Christian Era the term is used in a precise fashion to designate the physician who treats certain lesions by a manual act. Since that time the word has been deformed in many languages but always meaning one practicing that branch of therapeutics which necessitates the use of the hands and instruments. From humble beginnings it has become a scientific technique, precise in its execution and constantly more definite in its results. When one considers the amount of attention lavished on the medical sciences from earliest times their progress has been slow, but the surgery of today is a science taking its true origin in the middle of the last century. The very factors that have widened its scope and

increased its safety have by a curious paradox actually tended to increase its mortality and add factors of danger. The further surgery advances, the more delicate and precise its technique becomes, making a tool that should be used only with the greatest discretion and judgment by the trained hand. Before Listerism and anesthesia the enormous immediate dangers inherent in any surgical procedure required a stoutness of heart and background of training that kept surgical practice in the hands of the qualified few. The removal of the fear of sepsis and the necessity for speed and the reduction of sur-

* Presented at the Annual Meeting of the Michigan State Medical Society at Detroit, September 27, 1928. Chairman's address Surgical Section.

* Frederick A. Coller, M. D., graduate Harvard University Medical School, 1912; resident surgeon Massachusetts General Hospital, 1914-15. Professor of Surgery, University of Michigan Medical School.

gical operations to a formula allowed surgery to be practiced by anyone with a patient. The greater pecuniary rewards associated with this type of work furnished the incentive for its execution. The profession and their patients have suffered by this abuse of a practice requiring great judgment, broad experience and a long discipline, by the occasional untrained operator. This fact has been generally recognized and led to the formation of the American College of Surgeons, who have done much to correct the gross abuse of surgery by their standardization of hospitals and by the requirement of special training in their candidates. Their efforts along these lines will undoubtedly bear greater fruit as time goes by. That there is need of improvement is shown graphically by a study of the vital statistics by Willis. He shows that the mortality following all of the common operations has increased since the war, due, in his opinion, to the great increase in the number of partially trained men attempting to do surgery since that time. Much thought has been devoted to the formulation of the proper training required for the making of a surgeon and an increasingly large number of well qualified surgeons are being turned out each year. Many of these men find that after years of training, when they start their practice, that it comes all too slowly because they cannot compete with men with inferior training who will split fees. There is no doubt but that the greatest factor destroying the incentive to good training and encouraging a low grade of surgical performance is fee splitting. Until this situation is rectified we will not arrive at the highest surgical standards. We cannot remain pessimistic when we note the solid progress surgery is making and we can become positively enthusiastic when we see the great numbers of our profession who live-up to the highest traditions of the craft. It is in the lives and works of these men that surgery reaches its greatest glory, while the progress of surgery is best studied in their biographies rather than in a criticism of trespassers in our fields. No field of human endeavor offers greater or more stimulating personalities for study and emulation than does surgery and in this study we find answers to the problems that vex the present. In proof of these assertions I will recall to you the life and works of one who represented the highest attributes of our profession and whose personality and influence were second to none in de-

veloping the ideals and science of surgery in this country, Theodore A. McGraw. A study of his life gives a perspective on surgical progress during all of its vital phases and his character, activities and teaching ennoble our profession.

Theodore A. McGraw was born in Detroit in 1839, the son of Alexander C. and Susanna Walker McGraw. He attended a private school in Detroit conducted by Mr. Bacon, later going to the public schools. After finishing his preparatory work he attended the University of Michigan in 1858-1859. There were at that time no high schools and the universities and colleges were, in his own words, "indifferent high schools masquerading under more imposing names." At that time the University of Michigan had a unique feature, a chemical laboratory for students that proved a true cradle for scientists and again in his own words, "I have always regarded it as one of the happiest events of my life that when a student in the University I was influenced by Professor Douglas to enter his laboratory for practical instruction." Undoubtedly his scientific viewpoint was initiated here in Douglas' laboratory. He received the degree of Bachelor of Arts in 1859. Intending to become a lawyer, in the latter part of this year he went to Germany and commenced his studies in jurisprudence in the University of Bonn. Here he became acquainted with the professor of anatomy, and because of this contact he began the study of anatomy. His keen interest in this led to a change in his plans and he left law and began the study of medicine. After two semesters in Bonn he went to Berlin, where he continued his studies until 1862. Because of the outbreak of the Civil War he left his medical studies and returned home to support the cause of the North. Convinced of the advisability of completing medical work, he entered the College of Physicians and Surgeons in New York and received his degree of Doctor of Medicine in 1863. He was shocked at the laxity of method in the American schools. He said: "I found to my amazement that admission to the college, as regards medical qualification, was nearly free to all comers. In the graduating class were men who had spent their first two years of study in a preceptor's office. Everyone was obliged to take two courses of lectures, but as each course was only four months long, the two could be taken in one year. There were no obligatory laboratory courses except anatomy and all

instruction was given by didactic lectures. There was no division of the classes and the man who spent three years in a medical school was obliged to listen three times to the same talk."

After receiving his medical degree he took a position as contract surgeon in the United States Army and was stationed in Jefferson Barracks in Missouri. The work here was routine in character and one gathers that he was disappointed in the lack of opportunity for service and self-improvement. After three months of this work he applied for a commission as surgeon of volunteers, passed his examination and entered active service as assistant surgeon with the rank of first lieutenant. From this time until the end of the war his experiences were stirring. He was first in charge of a surgical ward in the military hospital in Chattanooga, later having charge of a smallpox hospital. He saw the Battle of Lookout Mountain from his hospital station. Late in the war he was attached to the staff of General J. H. Wilson, the federal cavalry leader, and was with him in his raid through Alabama. Being left behind in charge of some wounded, he was captured by General Forrest, but was soon released on parole. The war ending, he left military life, returning to Detroit to take up the practice of his profession. He thus started with a superb equipment, a technical training far better than was usual in those days, and with the initiative and confidence acquired by his varied intensive military experience. The influence of the young surgeons returning from their war experience was a profound one and changed the character of medical practice in the next generation. Many of them realized the inadequacies of the preceptorial system under which they had been educated and in the desire to get a place in which to develop their knowledge, actually founded medical schools. The great rise in the number of schools at this time attests to this truth and in most instances the proprietary medical schools that later were so severely and perhaps justly criticised, had their inception more often in the desire of a group of men for medical advancement and self-improvement than for financial betterment. The time came when this type of school could no longer cope with the increasing demands of medical education and they disappeared, but they mark a step between the older preceptorial system and the modern school of medicine.

Dr. McGraw's experience in Germany

had made him profoundly dissatisfied with American medical schools and in 1869 he, with others, founded the Detroit College of Medicine as a summer school. In 1871 he was invited to accept the chair of Surgery in the University of Michigan, which he did for one session. Here he found conditions similar to those existing in New York, with the exception of the laboratory work in chemistry. The situation was far from satisfactory. The faculty wished to raise standards, but was afraid they would lose their students if they did, and thus lose their only income, that from students' fees. He had enough material for a weekly clinic, but no place to treat patients after operation. The endeavors of the faculty to make any changes in the system met with determined opposition from the politicians and the public and Dr. McGraw then devoted his entire attention to the Detroit College of Medicine, where he was Professor of Surgery until he retired. After the reorganization of this school in 1885, he became president and dean, holding these positions until his retirement in 1915. In speaking of the impulses that led to these activities, he says: "I had discovered in my two years of army activity that I was deficient in that exact knowledge of anatomy that was essential to good surgery. The advent of antiseptic and aseptic surgery, besides, had opened a new field for operative work, that of the abdomen, which demanded a study of anatomical relations, which had never been taught in the schools. The period was marked by the appearance of new operations which had been devised and perfected during operative work on the lower animals. It seemed to me to be imperative, if I were to advance in my profession, that I should have facilities for dissections and other work that can be found only in a medical college. There was another reason in that usual desire to teach, so common in the medical profession since the time of Hippocrates."

He thus early had the desire for self-improvement, to experiment and to teach and to fulfill this desire he founded a medical school. Early in his career he began to write and one can hardly find a volume of the old *Peninsular Journal of Medicine* or *The Physician and Surgeon*, and at a later date, the *Detroit Medical Journal*, without many case reports, clinical papers and experimental observations from his pen. He soon became a national figure because of his pioneer work in abdominal surgery, particularly intestinal anastomo-

sis. In 1891, Dr. McGraw delivered the chairman's address before the Section on Surgery and Anatomy, "Upon the Use of the Elastic Ligature in the Surgery of the Intestines," and his reputation became international. This work was no happy chance, but was the result of several years of careful experimental work, carried on with his assistants, Ives, Ireland, Hickey and Warren. His writings show a wide acquaintance with the literature and a protean interest in surgery. Hardly a subject of surgery but what was illuminated by him, especially one notes his interest in cancer and intestinal obstructions. As an instance of his daring pioneer surgery we may recall that he did the thirty-seventh operation on goitre done in this country, in 1882. The case afterwards developed myxoedema and was examined by Sir William Osler at the request of Dr. McGraw.

His success in teaching is attested by a great number of prominent able men who received their early training and enthusiasm at his hands and by the almost idolatrous worship they had for him. One of them states: "The student felt the magnetism of his personality, his erudite diction was singular, his faculty of imparting knowledge exceptional, his descriptions, analysis, discourse and persuasion were a revelation, his disquisitions, especially those on tumors, were well correlated masterpieces and classics of their time."

He always preached longer and more careful training for surgeons and condemned the attempt to operate without sufficient training and education. In his words: "Modern methods of surgery admit of such radical procedure that the young surgeon is inclined to lose his respect for the human body. He thinks he can cut in at will and produce sweeping cures immediately. Patients share this notion to a large extent and are eager to submit to major operations which they have come to regard as trivial. Special equipment should be required of the surgeon. The young graduate in medicine should not

be permitted to exercise his zeal for operating until he has perfected himself through assisting older men. I believe a law calling for a special degree would be of value."

His relation to his patients was that of a Christian gentleman always ready to give all he had of time, skill and sympathy to all who asked.

In person modest, almost to a fault, upright, sympathetic with the weak, but quick to rebuke a wrong. He received every civic and scientific honor that could be given by the profession and his friends when he died in September, 1921. It seems that he can be epitomized in the definition of a surgeon written by Guy de Chauliac in the fourteenth century: "The conditions necessary for a surgeon are four: first, he should be learned; second, he should be expert; third, he must be ingenious; and fourth, he should be able to adapt himself. It is required for the first that the surgeon shall know not only the principles of surgery, but also those of medicine in theory and practice; for the second, that he should have seen others operate; for the third, that he should be ingenious, of good judgment and memory to recognize conditions; and for the fourth, that he be adaptable and able to accommodate himself to circumstances. Let the surgeon be bold in all sure things, and fearful in dangerous things; let him avoid all faulty treatments and practice. He ought to be gracious to the sick, considerate to his associates, cautious in his prognostications. Let him be modest, dignified, gentle, pitiful and merciful; not covetous nor an extortionist of money; but rather let his reward be according to his work, to the means of the patient, to the quality of the issue and to his own dignity."

So long as our profession can produce master surgeons such as Theodore A. McGraw as examples for newer generations of surgeons, our only errors will be when we deviate from the path they have blazed.

SEPTIC SORE THROAT SIMILAR TO SCARLET FEVER

Septic sore throat, the disease that is responsible for the present large loss of life in the small Massachusetts village of Lee, is caused by a micro-organism very similar to the one causing scarlet fever. Both are members of the streptococcus family. They can only be differentiated by a complicated test which must be carried out on a human subject, officials of the U. S. Hygienic Laboratory said recently. The present epidemic is by no means the first of the kind. Septic sore throat has occurred as an epidemic in this country and England since 1875. Generally the milk supply was the agent that spread

the disease. In 1911 over a thousand cases with 38 deaths were reported in Boston, while Chicago, in the same year, had 10,000 cases within a few weeks. Baltimore had 3,000 cases with 30 deaths in 1912. The milk becomes infected through the humans who handle it, and not through the cow, as in the case of tuberculosis. Cows may become infected with the organism, but it does not cause disease in them and such infection of the animal, as well as the contamination of the milk, is due to contact with infected humans, for this organism is not native to cows.—Science Service.

BLADDER PARALYSIS; ETIOLOGY, PROGNOSIS AND TREATMENT*

R. E. CUMMING, M. D., F. A. C. S.

DETROIT, MICHIGAN

In the wide range of disease, some apparently simple and easily recognized problems remain unsolved; with accepted ideas as to treatment, their real nature defies us and certain elements of danger lie concealed, except for a glimmer occasionally perceived by the practitioner most familiar with the anatomical segment concerned. For each specialty, medical or surgical, one can name one or more of such enigmata; in genito-urinary practice we grapple with several, one of which is the paralytic bladder.

Paralysis suggests the loss of the stricken patient's control of bladder function; it should also include as basic defining ideas, the possible derangement of the entire urinary system, the likelihood of sex loss, especially in the male, and the bearing of all these factors, upon the individual's recovery. Paralysis literally means loss of muscle (motive) power, and can be fitted to the bladder in mechanical terms, for this structure's fortunate ability to dam back its own contents until an instant fortuitous for emptying and then by a shifting of control, expel its accumulation, is a great natural boon. Conversely, disturbed balance of this muscle control, whether a true paralysis or not, brings misery and often dangerous sequellae. Incontinence, bed-wetting are miserable; real and permanent loss of control of the bladder, unless properly understood and cared for, leads to fatal renal destruction.

To differentiate between true paralysis of the bladder and partial or transient loss of functional control, whether illustrated by bed-wetting, or post-operative incontinence due to muscle loss, is at times very difficult. It is easy to know a bladder is full and painful, or constantly leaking its contents, and too easy to use a catheter for temporary relief. Cabot has shown that the normal bladder is extremely tolerant; the passage of catheters is a procedure, simple and relatively safe, but the use of any instrument in a bladder which has lost its innervation means infection and endangers life.

We are confronted with the patient unable to void following operation; is that paralysis? Again, the prostatic comes to us with retention, and likewise with dribbling; are we dealing here with paralysis? The tabetic often finds himself insensible to bladder filling or emptying; this condition is not far removed from a transverse myelitis which is surely followed by true bladder paralysis. Other types of impaired function constantly occur so that our problem, from the standpoint of etiology, prognosis and treatment, becomes complex, de-

manding careful survey and intimate differentiation.

Further, by way of defining true bladder paralysis and keeping in mind the causes enumerated below, let us limit ourselves to an exact clinical picture, that of vesical passivity due to loss of both inhibitory and contracting mechanisms; not a complete loss since then true incontinence occurs, no treatment is indicated or helpful, and one assumes approaching death. By contrast, neither the pseudo-paralysis due to over distention following operations, or shock, or enuresis, is true paralysis, although a temporary false balance of the voluntary and involuntary control is responsible. Additional circumstances which lead to confusion and sometimes disaster, are the many types of retention, especially in the male, from urethral stricture, herniae, prostatic disease, congenital malformations, and trauma.

Bladder physiology is too little understood, else the deviations of paralysis would be better known. While the bladder fills, its walls are relaxed, its sphincter tight, both dependent upon the involuntary mechanism, the sympathetic and parasympathetic control. In emptying, the bladder walls contract, the sphincter relaxing, or being pulled upon by the trigonum muscle, as shown by Wesson, again by involuntary control augmented by the voluntary accessory muscular activity which has its two-fold plan in relaxation of the external sphincter (in the male) and contraction of the abdominal muscles and the bulbourethralis muscle (in the male). To postpone micturition, the voluntary sphincter may contract, bearing the burden of pressure alone against continued or repeated sensory stimuli to the cord portion of the emptying mechanism. The lack of a well-developed voluntary sphincter in the female resolves itself into a higher percentage of incontinence in that sex and a greater tendency to frequency and urgency of micturition. Nature has offset this

* Presented at the 108th Annual Meeting of the M. S. M. S. Section on Surgery, September 28, 1928.

to a degree (theoretically) by granting to the female a slightly larger normal bladder capacity, although this supposition is no longer accepted and experiments have proven the male bladder larger.

Three years ago Potter made intravesical pressure determinations following the resection of both sacral nerves in dogs and found that after this radical interference with bladder innervation, no changes occurred in the pressure readings, even months following operation. The animals micturated at intervals and showed no evidence of bladder or renal damage. Despite the known variations in nerve supply with different animal species, it is difficult to grasp any reasonable basis for this lack of change. Unfortunately, Potter did not, or could not report whether the animals voided entirely involuntarily. This, however, must have been the case, the bladders being automatic, their muscular activity based upon intrinsic bladder wall innervation. He refers to Harrington's experiments with cats, which showed complete abolishment of micturition after division of the posterior sacral roots. Section of the nerve roots was followed by retention of urine and then feeble dribbling with residual urine. Quoting Potter: "The mechanism of the bladder has not been explained by any of the experimental work that has been carried out." Thus we see the need of further investigations of bladder physiology which in turn will widen our knowledge of bladder disease. Rose, Kreutzmann, Moore, Potter, Ravasini, Hirsch, McClintic, and others have made recent and valuable contributions to the literature on this subject.

As far as possible, I should like to limit the following clinical considerations to instances in which there is radical interference with the normal innervation of the bladder. The three-fold nature of defective innervation, namely, motor, sensory and trophic disturbances, naturally render this proposed limitation difficult. Furthermore, such elements as bladder neck obstruction enter in with the opportunity for secondary nerve tract involvement. The fact that partial paralysis may exist for years, recognized only with the onset of infection, must also be borne in mind.

It seems necessary, therefore, to further limit ourselves to a study of bladder paralysis, defined as a state which, progressing to its fullest possible extent, results in true and complete incontinence, a permanent loss of all controlling innervation. We know that such a clinical picture is not al-

ways the forerunner of, or coincident with impending death. If the nerve disturbance is sensory only, the patient knows no desire to empty his bladder, hence retention occurs. The next step is the overflow, an index to motor loss; finally we can visualize complete automaticity as the end-result. This step-like sequence, retention, paradoxical incontinence as represented in the so-called automatic bladder, and complete or as designated above, true incontinence, furnishes our basis for clinical diagnosis and therapy.

ETIOLOGY OF BLADDER PARALYSIS

1. Congenital: Incomplete development of bladder muscle and of sphincter muscle, especially, associated often with epispadias, partial or complete, giving a varying urethral construction, is a common cause of incontinence (paralysis). Most victims of these deformities do not survive beyond infancy, although one occasionally sees complete epispadias in an adult. We may group with this class of causative factors all grades of spina bifida which by nerve trunk pressure of maldevelopment allow degrees of paralysis.

Chute pointed out that the reason bladder symptoms are not pronounced or present at birth or in early life with spina bifida is that the spinal cord extends lower in the vertebral canal in intrauterine life than later; in the adult the cord ends and the cauda equina begins opposite the second lumbar vertebra, so the possibilities for pressure, and I would add, injury are increased, and tension occurs with the increasing disproportion in length, between the canal and the spinal cord. Chute further states that in cases of spina bifida cystica, the bladder involvement is more pronounced, and complete paralysis is likely to occur if the condition is untreated. From the diagnostic standpoint any evidence of faulty innervation in the region supplied by sacral nerves, should suggest spina bifida occulta, and vice versa, any deformity of the sacrum must arouse suspicion of incomplete cord protection and the possibility of bladder changes. Cystoscopically it is often not possible to recognize the pathology developing with spina bifida occulta so that roentgen ray studies are invaluable.

2. Acquired.

(a) Neoplasms of the brain and spinal cord. In varied location tumors are associated with bladder paralysis and the astute cystoscopist may often make the first clinical observations leading to the

diagnosis of tumor. Bladder trabeculations, without obstruction, past or present, signify a nerve trunk lesion. Nitze was perhaps the first to emphasize this in describing the so-called tabetic bladder.

(b) Injuries. The spine fracture group of cases proves most interesting; the injury must extend to the cord, cauda equina, or sacral nerve trunks, either by direct destruction or pressure. The fact that clinically one cannot determine whether a given paralysis is due to an actual lesion or to pressure, makes for conservatism in treatment as will be shown below.

(c) Syphilis. *Tabes dorsalis* presents the entire three-fold paralytic progression, i. e. retention, automatic bladder (paradoxical incontinence) and true incontinence. Often the diagnosis is made late due to the lack of subjective symptoms. Again, infections may cause recognition otherwise postponed, while finally, bladder symptoms, and cystoscopic study may be the first diagnostic findings and sufficiently clear-cut in themselves to make the diagnosis. The urologist today can easily recognize the tabetic bladder, but it must be remembered that in all tabetics, bladder changes may not have occurred at the time of any particular examination.

(d) Miscellaneous causes as listed by Kretschmer are:

- Syringomyelia.
- Multiple sclerosis.
- Post-diphtheritic neuritis.
- Myelitis.
- Hemiplegia.
- Psammomata*.
- Hematomyelia.
- Pernicious anemia.

Additional items are gummata and poliomyelitis; the latter was recently discussed by Kreutzman.

In four cases of pernicious anemia Kretschmer found degrees of bladder paralysis and described it as due to cord changes and possibly infection. He quotes Woltman as stating that approximately 81 per cent of pernicious anemia cases show evidence of destruction of nerve parenchyma. In 121 cases, Woltman found 13 per cent had bladder disturbances (12 cases, 8 with incontinence, 4 with retention). Kretschmer further quoted Billings as describing the changes in the spinal cord as sclerosis of the posterior columns, either alone or associated with sclerosis of the lateral tracts. I have several times seen complete paralysis in the

final stages of pernicious anemia. Earlier manifestations are difficulty in starting the stream, later retention occurs, then incontinence. In one of Kretschmer's four cases severe bladder and kidney infection occurred following local treatment.

Supplementing the foregoing brief reference to injuries, it should be stated that certain instances of hematomyelia are unquestionably traumatic in origin. Another factor, occurring more often in the past, is the injury following intraspinal injections. In a series of eight consecutive intraspinal injections of salvarsanized serum, there were five deaths within 48 hours. Two of the remaining patients developed a transverse myelitis which was permanent and naturally followed by bladder paralysis. The exact cause of these horrible accidents was never determined; apparently it was a toxic reaction as the calamity in all seven instances occurred so promptly. I had the two surviving cases in my care for many months with the opportunity of studying the bladder phenomena. Incidentally at this same time I was studying a considerable series of spine fracture cases, observations upon which have been published by Plagge-meyer and myself.

DIAGNOSIS OF BLADDER PARALYSIS

As stated previously, dysfunction of the bladder is easily recognized; to determine the exact nature of the abnormality, however, taxes even the most experienced urologist and is inevitably linked up with the associated basic cause. The latter must not be overlooked. Again, as illustrated in prostatism and suggested here, the paralysis, a progressive disease, is often so insidious as to be an old process when first recognized. Nevertheless, both prognosis and treatment depend upon a correlation of cause, associated disease and the stage of paralytic involvement.

PROGNOSIS IN BLADDER PARALYSIS

The outlook is variable, depending upon the cause and the underlying associated pathology. Another factor is superimposed urinary infection which I maintain is usually avoidable, always dangerous, often fatal. This contention is not original, but was proven by our observations mentioned above, many times proven in the intervening years, and has been accepted as correct by many outstanding urologists and clinicians.

The uncertainty of the outcome in injury cases, especially, warrants the ut-

most care. Those appearing most hopeless often recover from the injury, but succumb to renal infection. O'Connor recently reported such a case; in this instance the desired (and sufficient) automatic bladder-emptying having been established, catheters were used and severe bladder and kidney infection occurred, later, multiple calculi and complete renal destruction. The patient recovered from the paralysis, but died of renal sepsis. All too frequently abdominal operations are performed upon patients with tabes (unrecognized), having bladder retention and apparent abdominal distention, rigidity. Pain is the only symptom considered. Obviously, then, prognosis is often based upon the practitioner's ability, and lies solely with him; far afield from injury one may call to mind recent advances in the treatment of pernicious anemia and therefore the need for caution in the handling of accompanying bladder dysfunction.

Paralysis, of itself is not fatal; the retentive type can be overcome, and complete incontinence is a relatively safe state *per se*.

TREATMENT OF BLADDER PARALYSIS

(a.) Treatment of the causes of paralysis is of itself important, but cannot be considered in detail here. Congenital deformities may be overcome, tumors removed, injury pressure relieved, tabes arrested, and such of the other associated diseases ameliorated as is possible in each individual case. A review of the various causes of paralysis would revive individual possibilities of improvement. In treatment, too, one must recognize the chance of combined disease, as illustrated by a tabetic with obstructive prostate. The analogy between these two conditions has been suggested and their occurrence commonly in advanced age, allies them still further. Keyes suggested prostatectomy in such a combination, to allow easier handling for necessary catheterization.

(b.) Treatment of Paralysis. This resolves itself into two phases, one a sort of prophylactic and deliberate avoidance of instrumentation, the other a program of mechanical aid for the mere emptying of the bladder, with little consideration of late results. A third phase includes certain procedures which will be enumerated, having as their end the establishment of a safe incontinence. Keyes takes the part of the patient in referring to unbearable incontinence and to an individual patient's

statement that he'd "better be a catheter man than a bag man." This attitude overlooks the perfect cleanliness and comfort of the individual with an automatic bladder (true paralysis), and the fact that persistent catheterization is inevitably linked up with ascending infection, which is surely more rapidly fatal than the worst possible back-pressure effects in the few cases where reasonably early incontinence, paradoxical or true, is postponed. I think Keyes weakens his case in quoting Barney, who stated that 50 per cent of all tabetics die of renal infection and insufficiency.

My own observations in tabetics with retention, prove that safe and practical automatic bladder-emptying can be developed, an extremely worth-while accomplishment in younger men. It is conceded that constant skillful catheterization by a physician or trained attendant, with appropriate local and internal medication, still has a place in the treatment of paralytic retention, but this method should be reserved for the eldest of tabetics and those so ill as to preclude a fair possibility of recovery from the associated injury or disease.

Confronted with bladder paralysis and having established the exact or likely cause, what is the proper procedure? If it is retention following operation, catheterization is in order; if a retention with shock, hysteria, associated with acute urethritis, prostatitis, or salpingitis, Sitz baths, opium suppositories, intravenous use of uritone, mental suggestion, all are in order. The catheter call is strong, but for a real paralysis, deadly.

With no treatment whatever, the tabetic finds he cannot void until the bladder fills completely and that at will he may by abdominal pressure (without sensation) completely empty his bladder. With no treatment the injured man, paralyzed from the waist downward begins to have an adequate overflow in 48 to 72 hours, and usually, as reported by many observers, establishes some type of incontinence in two or three weeks. For individual cases in which the retention continues to an alarming extent, certain steps hasten the overflow. Young relates how the normal tendency to automaticity may be hastened when the bladder is full, by stimulation of sensory nerves below the site of cord damage, such as stroking the leg and swabbing the penis. In his original paper on shell fracture of the spine with bladder paralysis, Plaggemeyer referred to Head's observations concerning the value of daily

massage, especially stimulating the hypogastric plexus. Head ascribed the active stimulation to emptying as due to a peripheral mass reflex and we have repeatedly seen the actual value of these simple procedures. Prostatic massage, bladder massage per rectum, prolonged actual suprapubic pressure and hot enemata are also valuable aids in bringing on incontinence, which, once begun, continues indefinitely, with an immediate decrease in blood nitrogen and increase in renal function as measured by standard dye tests.

The danger of catheterization after spine injuries, was so well known during and after the war that it was prohibited by general hospital orders both in this country and abroad, and this rule is still strictly enforced. Our civilian hospitals and we, as individuals, are duty bound to carry out the same rule today.

I should like to add one other simple step for aid in the establishment of an automatic bladder. When, with other methods exhausted, the retention has not been overcome, and especially if the patient is conscious of pressure pain, emptying can readily be accomplished by caudal injection of novocaine which relaxes the vesical sphincters, and allows immediate emptying, which may be hastened by manual abdominal pressure. I see no harm in a reasonable repetition of this anaesthesia which is, of course, not anaesthesia, but an additional paralytic agent for temporary use until the expected overflow develops. In this connection we must remember that with a paralytic bladder the internal sphincter usually loses its tone, the temporary retention (a boon in the automatic bladder), being due to compensatory closure of the external sphincter. Cystoscopically one may see the posterior urethra as part of the bladder, an accepted diagnostic sign. Once automatic overflow is established, the patient may be educated to see that his bladder empties on schedule, calling for the urinal and seeking, if necessary, the aid of massage and abdominal pressure. Later, if ambulatory, the habits of regular emptying in convenient locations, becomes as easy as that of bowel elimination.

(c.) Surgical Procedures. Some have advocated suprapubic cystostomy to combat bladder paralysis, especially in injury cases; it is often resorted to, when retention is thought to be the result of bladder injury alone. If one could definitely foresee later improvement, with relief of the paralysis, such complete drainage would

be acceptable, but with paralysis, presumably permanent, it would seem a lazy expedient. Cystostomy means cystitis, in spite of the best care, and with paralysis, ascending infection and renal sepsis. I therefore cannot accept Boyd's advice and commend it as the proper treatment for bladder paralysis.

Maintaining that complete or true incontinence, with the distasteful urinal is safer than instrumentation, for those cases with considerable life expectancy and a continued failure to develop automatic emptying or with it, having a dangerous residual, I should advocate a deliberate creation of complete and constant drainage, either by surgical destruction of the external sphincter (in the male) or by further destruction of the inhibitory innervation by means of exposure and section of remaining nerve roots. This latter procedure commends itself to the neurologic surgeon who has established analogous operations elsewhere.

Finally, the judicious use of urinary antiseptics and bladder antiseptics, the former including those now accepted for intravenous administration, furnish a valuable asset and are of supreme importance where diagnosis of the condition of the bladder requires instrumentation, or where surgery is necessary for calculi or gross suppuration.

SUMMARY

1. Bladder physiology is not sufficiently well known to make bladder paralysis easy to identify or understand. In spite of this, certain well-established facts as to the results of paralysis form a basis for proper therapy. Among these are the knowledge that paradoxical incontinence usually develops and can be hastened in its development; that with instrumentation renal infection always occurs and is frequently the cause of death.

2. For convenience the emptying of the bladder is described as the action of the detrusor mechanism and the word detrusor mechanism refers to the entire bladder musculature, which by means of its intrinsic nerve supply usually retains a considerable tonus after loss of extrinsic innervation, and responds to internal pressure as well as that of the so-called accessory apparatus specifically the abdominal muscles.

3. One essential in treatment is the care of the associated deformity, injury, or disease. The prognosis is intimately bound up with the prognosis of the associated basic cause, and the treatment likewise is

dependent upon the treatment of the accompanying disorder.

4. The desired sequence is the reasonably prompt overflow and establishment of the "automatic bladder." Certain simple procedures including repeated injections of the caudal canal with novocain, lend themselves to hasten this process. Instrumentation of all kinds should be avoided.

5. Complete incontinence is safer than any induced artificial drainage.

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WHERE PERSONALITY COUNTS

Once upon a time there was a woman who needed a doctor but she flatly refused to call in the physician who had previously attended her. Anxiously the family questioned her. He had brought her through serious illness and why must she try someone strange and unacquainted with her former condition? Reluctantly she admitted that she could not bear to have him come because he was so unsympathetic.

Surprising as it may seem in view of all that is said and written of the demoralizing effects of sympathy, the most intelligent people, once they are sick, demand sympathy and will not do without it. Given a choice between a sympathetic quack and a brusque practitioner of undoubted repute and nine times out of ten they will call the quack. Sympathy they will have, whatever the therapy.

The busy practitioner who hears complaints of all sorts from morning to night and perhaps also from night to morning is only too apt to become "hard boiled" in appearance if not in fact. A real interest in the patient's malady does not inevitably carry with it a feeling of sympathy for the patient himself. Too often the concentration upon physical disorders blinds the physician to the patient as a human being.

Pity is, of course, taboo, for no one exposed to pity can maintain his self-respect. But concerning sympathy there seems to be some difference of opinion. There are those who would have it that sympathy merely intensifies suffering by arousing self-pity; that sympathy of any sort or in any degree only serves to foster a craving for more of the same.

Now of course expressions of sympathy may take unhealthy forms. Indeed, a normal convalescence may be retarded by a sympathetic attitude which enhances the pleasurable aspects of the situation to such an extent that its prolongation is desirable. It is not likely, however, that the physician will fall prey to this particular error of judgment. The opportunity for unwise sympathy lies more in the way of family and friends than physician. Furthermore, circumstances do

not tend to exaggerate but to diminish the physician's available fund of sympathy.

Nevertheless, to be successful the physician must cultivate either a real sympathetic attitude or a plausible counterfeit. The best balanced people develop a certain amount of childishness under the stress of pain and misery, and a brusqueness which they would consider reasonable in health, they resent when they are uncomfortable and helpless. A person whose attention is occupied with aches and pains is not going to make allowances for hurry or fatigue or hunger or even illness in the doctor, nor can he be expected to do so.

Every physician knows that it takes more than medicine or surgery to cure a patient and that extra something is derived from the personality of the physician. More and more physicians are realizing, as the psychiatrist has realized this long time, that a sick person is sick all over, regardless of the particular organ from which the symptoms appear to be emanating. To treat a patient successfully the physician must take into account his entire personality. Once he has as good an understanding of the personality as he has of the liver or heart or what not, there will be no further difficulty about the sympathy. He will know at what points he must apply sympathy just as he knows on what areas to apply compresses, and he will use equal discretion in the application. Further, he will be discriminating in the quality of his sympathy and determine when it should be tempered with firmness and when it should have an added dash of the ever necessary encouragement.

A sympathetic attitude is an essential feature of the physician's armamentarium. Without it his practice will dwindle, for sick people will not voluntarily employ an unsympathetic doctor. Without it he cannot make the most of his scientific knowledge and professional ability, for the use of wisely applied sympathy does much to enhance the value of pills and powders and to lessen the terror of the surgeon's knife.—*New York Medical Journal and Record*.

THE MANAGEMENT OF PYELITIS*

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Pyelitis or pyelonephritis is the most common lesion of the genito-urinary tract. Though there is an enormous literature covering every phase of the disease and its management, many physicians carry their patients along for months, and often years, on ineffective drugs and bladder lavage. It seems worth while, therefore, to briefly review the subject from time to time and take account of stock.

Infections of the kidney are always secondary to some focus of infection elsewhere in the body. They tend to be self-limited, but persist if there is obstruction to urinary drainage or constant reinfection. The offending organism in 80 per cent of cases belongs to the colon group while cocci and other bacteria constitute the remaining 20 per cent. Acute pyelitis may result either from obstruction to the outflow of urine plus infection, or, to the invasion of the kidney by an organism capable of infecting it when there is no obstruction. Bumpus and Meissner¹ present evidence favoring the specificity of kidney infections. Whether we accept this view or not, Hinman² points out that it would be difficult to explain why renal infections occur without obstruction unless we admit that certain organisms have a predilection for the kidney.

Chronic pyelitis, on the other hand, is practically always due to some form of partial obstruction. Obstructive lesions may occur in any part of the urinary tract, but those lying above the bladder are most commonly overlooked. Ureteral strictures, whether congenital or inflammatory; ureteral edema; stones; extra-ureteral tumors as large fibroids and retroperitoneal lymph glands; seminal vesiculitis; congenital anomalies as aberrant lower pole vessels, double ureter, hydro-ureter and hydro-nephrosis; and neuro-muscular dystrophies arising from cord lesions are the important causes of urinary obstruction. Ureteral obstruction in pregnancy probably deserves particular mention because of its frequency. A number of theories have been put forward to account for it. Most logical among them is the view that the enlarged uterus is the offender. Since pyelitis occasionally occurs before the third or fourth month, however, this theory is not entirely sound. It is also suggested that congestion at the neck of the bladder due to the downward pressure of the uterus or the enlargement of the uterine artery may be responsible for the obstruction, but the true etiology has not yet been established.

Clinically we often classify pyelo-

nephritis under three general heads: (1) pyelitis of infancy; (2) pyelitis of pregnancy, and (3) pyelitis of the adult. The pathological picture in acute pyelitis has been thought to be the same in both the child and the adult. Chown³ has recently shown, however, that in infants under two years there is practically no pelvic or ureteral involvement at all, but that the lesion is essentially a suppurative interstitial nephritis. The only case on record in which definite pelvic lesions were observed was reported by Cabot and Crabtree⁴. Braasch⁵ has given us a very complete picture of the gross pathologic changes in chronic pyelitis. Obviously since the types of urinary obstruction are exceedingly variable, an almost infinite variety of gross pathologic lesions may be observed, but the majority of cases present a fairly typical picture. There is usually irregular dilation of the upper third of the ureter which stops abruptly at the ureteral junction. Little if any dilation may be seen in the calices and pelvis. As the lesion progresses, dilation of the minor calices first appears, then the major calices and pelvis show definite enlargement. When there is upper urinary tract infection, a secondary cystitis appears almost at once. It is this lesion which gives rise to the most common symptom of pyelitis, namely frequency. In pregnancy, autopsy as well as urographic studies, have shown that in nearly a third of all cases there is dilation of the ureters. In pyelitis of pregnancy the ureter is always dilated and the gross pathologic picture is that of chronic pyelitis. Unlike chronic pyelitis from other causes, however, the dilation frequently disappears post-partum.

Normally the urine is carried from the kidney to the bladder by means of ureteral peristalsis. As scar tissue, resulting from chronic infection increases and dilation of the ureter progresses, there is less peristalsis. Ultimately the ureter becomes a passive carrier of urine. Drainage of the pelvis then depends upon the secretory

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pressure of the kidney and gravity, and we have established a mechanism which is in fact not unlike obstruction from other causes. The longer the infection continues the more ureteral damage is done and the greater the impairment to satisfactory drainage. A vicious circle is established.

This briefly presents the problem which confronts us as we undertake the management of a patient with pyelitis. Since the pathology is exceedingly variable the methods of treatment vary greatly. As in other lesions, that resist all forms of treatment in a large percentage of cases, innumerable drugs and surgical procedures have been put forward. It is often difficult to select from these the most effective therapeutic measures. I shall present those, however, which at the moment give the most satisfactory results and seem to be generally accepted. It is interesting that in the treatment of chronic infections of the upper urinary tract by all methods, only about one-third of the patients get well, one-third improve and one-third grow progressively worse. This fact was brought out by Braasch and Cathcart⁵ in a study of over two thousand cases.

TREATMENT

Before undertaking the management of a patient with pyelitis a complete examination should be made and important lesions treated. Foci of infection, particularly of the ears, nose, throat and teeth should be abolished. The patient's ability to resist and overcome infection depends largely upon his general health. No known therapy can reach the deep infections of the upper urinary tract. The urinary organs may be given every opportunity to function normally and throw off the offending bacteria but the outcome rests with the ability of the body tissues to destroy them.

In general the treatment of pyelitis falls into two groups: medical and surgical. Medical treatment consists in the administration of certain drugs and vaccines, forcing fluids and rest. It is chiefly of value in acute and subacute infections. Chronic pyelitis as a rule does not respond to drug therapy alone since it is impossible for any drug to reach the infections harbored deep in the tissues. The oldest surviving therapy is that of alkalinization which has been accepted for almost a century and its use has been continued. Whether the action of sodium bicarbonate or the citrates which are used for alkalinization is specific or whether they act as

diuretics and the effect is one of flushing is not definitely known. After an interesting experimental study of this problem, Helmholtz⁶ suggests that alkalinization may prevent the absorption of toxic products since after the acute symptoms subside, the same urinary findings exist. He concludes, however, that their chief value lies in diuretic action.

The rapid change from acid to alkali is an old and commonly accepted practice. It is thought that the lag in the bacterial growth resulting from the sudden change in the reaction of culture media accounts for the beneficial results. Helmholtz⁶ has shown experimentally that the effect of the lag is scarcely appreciable, thereby exploding the theory.

Probably the most popular drug used in the treatment of urinary tract infection is hexamethylenamin. Since Nicolier demonstrated the liberation of formaldehyde as a decomposition product of this drug in acid urine, it has been generally accepted as a urinary antiseptic. But repeated investigation has shown that the amount of formaldehyde liberated in the majority of cases is not bactericidal. Burnam⁷ demonstrated formaldehyde in bladder urine in only one in five patients on ordinary doses, while Hinman⁸ found five per cent of urines germicidal in patients receiving 15 gr. t.i.d. Here again we find ourselves using a drug with some success but without experimental support for it. It is probable that the forced water given with the drug is the chief therapeutic agent. Hexamethylenamin is most effective given in 7½ to 15 gr. doses every six hours night and day along with some acidifying agent as sodium acid phosphate or ammonium chloride. The drug may produce kidney pain associated with albumen and red blood cells in the urine. In this event it should be discontinued and fluids forced. The symptoms subside promptly.

In 1924, Veader Leonard⁹ gave us hexyl-resorcinol as an urinary antiseptic. It depends for its germicidal power on its concentration and ability to lower surface tension. Unlike our general practice in the use of urinary antiseptics, the forcing of fluids is contraindicated. It is given in .6 gram doses t.i.d. after meals after first establishing a tolerance with small doses. Several years ago, Arn and I¹⁰ investigated its clinical value in a large series of cases at the University Hospital. About ten per cent of the patients were unable to tolerate it. There were about thirty per cent of cures and about fifty per cent of sympto-

matic cures. Twenty-five per cent showed no change. The remainder were unimproved. These figures show no advantage as concerns cure over other therapeutic measures, but the patients enjoyed earlier and more complete symptomatic relief. Combined with other methods of treatment a higher proportion of cures should be obtained. The chief objection to the drug is its high cost and the necessity of prolonged use for satisfactory results.

Mercurochrome given intravenously has been widely used for the treatment of kidney infections. Frequent severe reactions, associated with chills and high fever, colitis, stomatitis and occasionally death resulting from its administration contraindicate its general use. Now and again a brilliant result may be obtained. Other drugs as salol, boric acid, methylene-blue and acriflavin are found useful at times but are not sufficient importance to discuss here. Sandalwood oil gives symptomatic relief in tuberculous cystitis and has long been regarded as specific for gonorrhea. I have not found it of great value in non-tuberculous infections of the kidney.

Vaccines, both specific and non-specific, have given spectacular results now and again. On the other hand, they are uncertain and usually fail.

Before passing to the surgical management of pyelonephritis I think it important to emphasize the importance of water in the treatment of urinary tract infection. Water is the most effective diuretic we have. It is probable that the beneficial result of most of the so-called urinary antiseptics is due to their diuretic action. In giving water the patient or nurse is directed to record the intake and not less than one hundred twenty ounces a day should be ordered for the adult. If the patient is vomiting, two to three thousand c.c. of normal saline may be given subpectorally without discomfort if injected slowly. This is particularly important in the acute cases with chills, high fever and marked prostration. In their monumental work on the mechanism of hydronephrosis and pyelovenous backflow, Hinman and Lee-Brown¹¹ have demonstrated the ease with which reabsorption occurs in the kidney. Under less than the secretory pressure of the kidney, reabsorption will take place directly into the renal venous system. Magoun¹² has shown that bacteria will pass from the kidney pelvis into the circulation. With these facts before us, the

enormous value of constant flushing out of the kidney pelvis should be clear.

After having carried on with conservative treatment for two or three weeks and though symptomatically improved, the patient's urine still indicates infection, complete urinary tract examination by means of the cystoscope should be undertaken. The longer the lesion exists the more difficult it is to cure. Since many of these patients go along with relatively little discomfort, they are often treated conservatively for years. In spite of all that has been said and written, bladder lavage plus some urinary antiseptic is common treatment for pyelitis. Cystitis is never primary but unfortunately the symptoms of pyelitis are chiefly those of the secondary cystitis. A single lavage of the kidney pelvis will often do more good than a year of bladder lavage.

Though most acute pyelitis responds quickly to medical therapy there are certain cases which require prompt local treatment. In the acute renal infections of pregnancy, associated with chills and high fever, it has been my custom to pass a large ureteral catheter into the kidney pelvis and drain. I have never seen any harmful results come from it. On the contrary there is always a rapid fall in temperature, relief of pain and marked general improvement. Acute pyelitis of pregnancy is a dangerous lesion and should be kept under close observation. The knee-chest position, at frequent intervals elevation of the hips and rest in bed on the left side is of great value in relieving possible obstruction and facilitating drainage. Force fluids by mouth or by hypodermatoclysis.

In those cases which become chronic or are chronic from the outset and do not clear up promptly under medical treatment an accurate diagnosis may be made by means of the cystoscope, ureteral catheter, ureterography and pyelography. This applies to children as well as adults. With the perfection of the child cystoscope there is a rapidly increasing body of experience which seems to indicate that the same lesions exist in the child that have long been recognized in the adult though there is probably a higher percentage of congenital anomalies.

Stones and aberrant lower pole vessels recently emphasized by Crabtree¹³ are easily dealt with surgically while plastic operations on the ureter for strictures and the various anomalies usually fail. The vast majority of cases are most satisfac-

torily managed by ureteral drainage and pelvic lavage. Though ureteral stricture is an important etiological factor in pyelitis, we meet with it much less frequently at the University Hospital than does Hunner. In his studies of the ureter and ureteral stricture Braasch¹⁴ has checked up apparent strictures seen in ureterograms, at operation and found them to be due to uretero-spasm. He warns against depending upon a single ureterogram. There is no doubt, however, that dilation of the ureter makes for better drainage and not only gives symptomatic relief but hastens recovery. In very resistant cases it is often necessary to continue weekly pelvic lavage for months, but this treatment offers the most effective management of all types of pyelitis.

Much is written about the antiseptics used in kidney lavage. I doubt that it makes any difference what is used. We frequently see marked improvement by the passage of a ureteral catheter alone. However, they do no harm and may be of some value. Those commonly used are saturated solution of boric acid, one to two per cent mercurochrome, one to one thousand acriflavin, one to five thousand metaphen and silver nitrate in one to five per cent solution. Wislocki and O'Connor¹⁵ have shown that mercurochrome penetrates the kidney tissue deeply while silver nitrate mildly cauterizes the pelvic mucosa, setting up a marked reaction in the submucosa. If the two antiseptics are used, therefore, it is important to use the dyes first. In my experience, silver nitrate is the most effective drug used in pelvic lavage, but at the same time it is the most irritating. Acriflavin is not germicidal but prevents the growth of organisms and is better tolerated than either mercurochrome or silver nitrate.

Before closing, let me add a further observation which I feel is exceedingly im-

portant. Most cases of pyelitis are treated until they are symptom free and then dropped. This is poor practice on the part of the doctor and harmful to the patient. Before treatment is discontinued, the urine should be negative repeatedly unless we happen to be dealing with a more or less hopeless lesion. The longer the duration of infection the less are the chances for a cure.

In conclusion let me say that I am aware I have given you nothing new. My purpose in presenting the present status of the management of this very common disease is to make a plea for earlier complete investigation of the urinary tract in the child as well as in the adult when infection has been demonstrated. If this is done, the now large and practically hopeless group of about one-third of the patients with upper urinary tract infection will be given a fighting chance.

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ERADICATION OF SOCIAL DISEASES POSSIBLE IN OUR LIFETIME

The worst of the social diseases can be made to disappear practically in our lifetime by means of the methods now at our disposal, stated Dr. Thomas Parran, assistant surgeon general of the U. S. Public Health Service. The control and eradication of this disease is a public health problem, like the control and eradication of yellow fever and smallpox. However, the nature of these social diseases requires different methods to wipe them out and the methods that we have are costly. Research is needed, and is now under way, to simplify these methods and reduce their cost. In every community, no matter how many cases of social diseases there are at any given time, there are always only a few active spreaders. If it were possible to quarantine

these, as active cases of other communicable diseases are, the social disease situation could be quickly and radically improved. As it is, the most practical method is that of "prophylaxis by treatment" which proved its effectiveness during the war. The death rate from these social diseases has not declined in the last 10 years as have the rates for other diseases as a result of public health work. Estimates based on hospital and clinic records place the number in this country under treatment for social diseases as approximately 1,000,000 people. The cost of these diseases to state and individual is enormous and must be figured from loss of wages, cost of medical treatment and shortened life span.—Science Service.

THE PLACE OF PYELOGRAPHY IN DIAGNOSIS*

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CLEVELAND, OHIO

It would appear at first consideration rather unnecessary to champion the cause of pyelography. However, when it can be stated that in one of our large city hospitals of average character during one of its recent current years, pyelography was used as a differential diagnostic aid not to exceed a dozen times, there is some justification for inquiry into the situation. There seems to be no doubt that pyelography is a practical and established method of diagnosis. The first attempt to study the urinary tract by means of X-ray was made as early as 1897 by Tuffier when he suggested the use of an opaque ureteral catheter. Fenwick, in 1905, suggested a ureteral bougie made opaque by the incorporation of metals. This bougie was the forerunner of our present X-ray catheter and is the earliest suggestion to continue to present day use. In 1904 Klose proposed the use of an emulsion of bismuth as an opaque medium for X-ray study of the renal pelvis and ureter. In 1909 Keyes introduced a form of colloidal silver as a pyelographic medium. In 1911 Burkhardt and Polano suggested the use of oxygen. In 1918 Cameron suggested the use of a solution of sodium or potassium iodide. This media quickly proved to have so many advantages over any previously suggested as to give pyelography a practical rather than an experimental standing. Much credit is due such workers as Cabot, Braasch, Keyes, Walker, von Lichtenberg, Oehlecker and others for their pioneer work in the correlation of pyelographic findings with disease processes.

One of the important factors which curtails the use of this diagnostic method is our failure to recognize its value in general medical and surgical diagnosis. It is the purpose of this paper to call attention again to the possibilities of pyelography in general diagnosis. The ophthalmologist may observe a choaked disc or the neurologist may be confronted by the clinical picture of a brain tumor both of which might be the result of a metastasis from carcinoma of the kidney. The internist may properly turn to the urologist with the question whether a particular clinical picture of interstitial nephritis is due to a congenital polycystic kidney. The pediatricist may ask whether in a given case of pyelitis in childhood there is some underlying congenital anomaly. An upper abdominal tumor may escape identification by means of the usual X-ray and physical examinations. A midline epigastric mass may as well be a horseshoe kidney, a pancreatic cyst or a gastric carcinoma.

While symptoms due to a biliary tract obstruction, to complete or partial ureteral occlusion, to gastric or duodenal pathology are more or less typical from the clinical viewpoint alone, we are regularly confronted by cases in which histories and physical findings leave us with out conviction as to the diagnosis. In about 10 per cent of cases of hydronephrosis in young persons appendectomy has been performed without relief of symptoms. Exploration or removal of a practically normal gall bladder from patients with right renal pathology still occurs. Hematuria which may stop for a long period of time with only observation or pills may in fact be an early and valuable sign of an operable cancer of the kidney. Secondary malignant bladder implants having their origin in the kidney have been treated locally with disastrous results.

By a pyelogram we commonly mean the radiographic picture obtained after the introduction of an opaque medium into the renal pelvis and calices together with the ureter. While technically more correct, the cumbersome term pyelo-ureterogram has not come into popular use. It must be borne in mind that the pyelogram by and of itself may be misleading. A closed hydronephrosis, renal tuberculosis, a solitary cyst or a neoplasm of the kidney might all be evidenced by practical identical pyelograms. The diagnosis in such an instance would be made only with the help of other clinical and laboratory data. History of intermittant, painless hematuria with loss of weight and strength would tend to support a diagnosis of renal-neoplasm while hematuria with more or less marked bladder symptoms would favor tuberculosis. Repeated renal colics over a long period of time are much more suggestive of hydronephrosis than of a solitary cyst which is more commonly a painless tumor without urinary symptoms. Gastro-intestinal symptoms or the signs of a blood dyscrasia are more commonly asso-

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ciated with an extra-renal tumor. In a similar way the physical examination and laboratory data may help in the correct diagnosis of a particular pyelogram. The prerequisite data are a careful history and physical examination; urinalysis including staining for bacteria, cultures and guinea pig inoculations as indicated; a determination of the combined renal function; cystoscopy and study of the split functions and urines. Very important also is the X-ray examination of the kidneys, ureters and bladder before cystoscopy. So important to good interpretation is this preliminary plain X-ray examination as to be considered a part of the pyelogram itself.

In extending pyelography in the field of general diagnosis it will be discovered that an increasingly large number of urologically negative investigations are performed. This will be in proportion to the persuasiveness of the consultant requesting the examination and also, it must be added, to the ability of the urologist consulted. By failure to exhaust all of the possibilities of study the urologist commits himself completely to the diagnosis, be it negative or positive. When is pyelography indicated or perhaps more properly, when is it contraindicated? This question gains weight when one realizes that cystoscopy is a minor surgical procedure which is expensive and which is frequently not without pain and discomfort and occasionally not without danger. The best rule is that it should be employed only in cases where the resulting information is of essential value to the patient. This excludes all cases of malignancy where wide spread metastases have already been demonstrated even though it might remove doubt as to the location of the primary carcinoma or result in a most unusually interesting pyelogram for study.

Cases where the age or general poor condition of the patient makes surgery impossible will receive no benefit from pyelography. Its more or less unrecognized usefulness in the border line case places pyelography on a par with such procedures as the electrocardiogram, basal metabolism, the Graham-Cole test or gastro-intestinal X-ray examinations. The information which it may give in many cases that the upper urinary tract is normal serves to make a positive diagnosis by elimination.

IDENTIFICATION OF SHADOWS

X-ray examinations of the kidneys, ureters and bladder without the use of

opaque media serve to divide cases into two general groups, namely those with shadows and those without. Mention has already been made of the great importance of these so-called original plates and they should be employed in every case where there is the slightest possibility that the symptoms are due to urinary tract disease. These plates are obtained early in the investigation before barium has been given lest the examination be later delayed by the time necessary for the passage of the barium. Certain characteristics of the shadows observed when sufficiently well marked will sometimes make a diagnosis. The typical gall stone shadow with its peripheral density, multiplicity and grouping is quite different from the more uniformly dense shadow of the renal or ureteral calculus. A stag horn calculus may so completely outline the pelvis and calices as to be unmistakable. Calcification of mesenteric and retroperitoneal lymph nodes tends to be recognizable by their position and mottled density. In mesenteric glands a wide range of position especially if near the midline will help in identification. Calcification of renal tuberculosis when it occurs is most commonly seen only in the kidney area, but may also involve the ureter sufficiently to indicate the position of this structure. It is a diffusely mottled shadow giving an eroded buckshot appearance. This type of shadow may be confused with that occurring occasionally in the so-called hypernephroma of the kidney and indeed, may sometimes be indistinguishable from it except by pyelogram. Phleboliths are responsible for the most confusion and even to the very accustomed eye may require pyelographic differentiation. They are characteristically round, multiple and are arranged in lines corresponding to the course of the blood vessels. Shadows in the bowel of fecoliths, unassimilated pills or capsules can usually be easily identified. Interesting shadows are occasionally seen in malingerers. The position and general artificial appearance will usually cause enough suspicion to call for further X-ray under close supervision. Were these characteristics rigid our problem would be very much easier. Gallstone shadows may occur singly and with such density as to strongly suggest a renal calculus. Pleboliths or calcified glands may be indistinguishable from ureteral calculi. Many mistakes would be avoided if we were to regard the shadows of the average original

X-ray plate simply as "shadows" until their precise identity is known.

The pyelogram offers a means of identifying these original shadows. As a rule any shadow which is obscured by the pyelographic media may be said to be intrarenal. It is conceivable, though it does not often occur in practice, that the original shadow might be superimposed on that of the pyeloureterogram. It is further possible for renal or ureteral stone to be present without pyelographic deformity. In cases of doubt where there is a normal pyelogram and the original shadow is obscured it is wise to repeat the original plates to make sure of the persistence of the original shadow. If the shadow persists a lateral pyelogram will be very helpful, for the large majority of extra-renal shadows will lie anterior to the kidney and ureter and will therefore be apart and distinct from the pyelogram. In most cases the dilatation of a calyx or of the pelvis or ureter will furnish evidence of the intrarenal nature of the shadow or they may be visible through the media and their exact location in the kidney may be determined. The degree of dilatation and the evidence of infection may indicate with certainty whether lithotomy or nephrectomy may be required. An extreme intrarenal pelvis may be so clearly demonstrated as to indicate before operation that nephrolithotomy rather than pyelotomy will be necessary. Particularly in nephrolithiasis the phthalein test of the functional capacity of the kidney may be misleading and the question whether or not the kidney can be saved will often be determined from the pyelogram alone. Stone is commonly associated with horseshoe kidney and unless the original plates are so particularly good as to show the U or N shape of the kidney tissue itself the original shadows will appear to be too low and median for renal stone. Pyelograms in these cases will not only make the diagnosis but will importantly change the surgical approach.

Shadows appearing lateral to the pelvis and calices, even though they overlie the shadow of the kidney substance itself, are, generally speaking, extra-renal. The occurrence of cortical stone has been estimated at less than one in twelve thousand cases of renal lithiasis. The incidence of error from this source is therefore practically negligible. Care must be taken in reading such plate, for a shadow may appear at first sight to be lateral and apart from the pyelogram, while on close examination it will be seen that the shadow is

in fact connected with the calyx by an indistinct and narrow bridge of media. This finding suggests that cortical stone is a misnomer and that the cortical stone is an intrarenal calculus which has been completely separated from the calyx by scar tissue. Shadows which persist at a higher level and in line with the calices, but are still apart from the pyelogram, must be regarded with suspicion. The possibility of a duplication of the renal pelvis with the pyelographic filling only of the lower pelvis must be borne in mind. Unfortunately, from the standpoint of the pyelographer, there is nothing characteristic about the lower pelvis in duplication. If the duplication of the ureter is complete, closer inspection of the bladder will show two urethral openings. In partial duplication of the ureter filling of both pelves may usually be accomplished through a Garceau catheter in the lower end of the ureter with the patient in Trendelenberg position.

In the diagnosis of renal or urethral calculi, which do not cast an X-ray shadow, the pyelogram is a definite aid. Displacing the media as they do, it is frequently possible to determine their presence and location by the filling defect in the pyeloureterogram. Dilatation of the pelvis, calices or ureter is of the same significance as in the X-ray opaque calculi. The stones will sometimes absorb enough of the media to render them opaque to the X-ray and plates taken ten to thirty minutes after the pyelogram are many times diagnostic.

HYDRONEPHROSIS

In the group of cases where the original X-rays are negative, too much dependence is placed on the urinalysis. The opinion that a negative X-ray and a negative urine exclude upper urinary tract disease is unsound, and generalization in this direction is responsible for many mistakes. This is especially liable to occur in the case of an early hydronephrosis, particularly if the right kidney is involved. Symptoms of this disease most commonly make their appearance in the third decade of life at an age when cholecystic disease is rare and appendicitis is common. Nausea and vomiting occasionally occur and while the pain is atypical, it is most frequently misdiagnosed appendicitis. The usual progressive dilatation of the pelvis, the appearance of infection with the ultimate complete destruction of the kidney, are serious possibilities of overlooking the diagnosis, in view of the fact that many of these cases

are amenable to early operation. The interpretation of pyelograms in early hydronephrosis is sometimes very difficult, while that of a well marked dilatation is perhaps the easiest of all pyelograms to read. There is a wide range in the normal capacity of the pelvis and calices and in their volumetric relationship to each other, and it is frequently helpful to pyelogram the other side for comparison. In early cases there is no delay in the appearance time of the split phthalein which is so frequently a valuable aid in the late cases. The dependence on aspiration may be misleading for it is possible in nervous patients who have taken large amounts of water to aspirate an astonishing amount of urine from an undilated pelvis. The reproduction of pain by distension of the pelvis is insufficient evidence for the diagnosis. When the obstruction is close to the ureteropelvic juncture there will be a relatively great dilatation of the pelvis, while lower ureteral obstruction will produce a relatively greater dilatation of the calices. Thus, in the early idiopathic hydronephrosis in young individuals the earliest sign is a widening of the pelvis of the tam-o-shanter type, together with some broadening of the bases of the calices. Lower ureteral obstructions, on the other hand, will show a practically normal pelvis with dilatation of one or more calices. These are important rules to bear in mind in treating the condition, for it is apparent that the partial lower ureteral obstruction which may accompany congestion and inflammation of the prostate and seminal vesicles will be entirely unaffected by a plastic operation on the ureteropelvic juncture.

IDENTIFICATION OF TUMOR MASSES

Considerable enlargement of the spleen may occur without change in the white or differential count. The right lobe of the liver may be so prominent as to be mistaken for the kidney. A psoas abscess may be present as a confusing enlargement of one side of the mid and lower abdomen. A large ovarian cyst or a solitary cyst of the lower pole of the kidney may produce a very similar abdominal tumor. It is often possible to limit the diagnosis to two possibilities, for example, spleen or kidney, gall bladder or kidney, and the finding of a normal pyelogram will sometimes make the diagnosis by exclusion. By placing a coin on the skin over the most prominent part of the tumor mass the relationship of the tumor to the pyelogram may furnish

additional information about the tumor. Lateral displacement of the ureter favors retroperitoneal or intra-abdominal pathology, while median displacement favors perinephritic or psoas abscess.

HEMATURIA

In the proper consideration of gross hematuria pyelography is an indispensable diagnosis aid. It is possible from the history to establish the fact that the hematuria is of an initial or terminal type and therefore probably not of renal origin. It is true that between the ages of fifteen and twenty-five patients are too old for the renal neoplasms of childhood and too young for the neoplasms of adult life. These are but general rules and it would undoubtedly be safer to subject all cases of gross hematuria to cystoscopy at least, before concluding that the kidney is not at fault. Gross hematuria of renal origin may be unilateral or bilateral. Cystoscopic observation alone will establish this fact. When gross hematuria is bilateral renal neoplasm is practically excluded. The two conditions in which bilateral bleeding occurs most often are nephritis and purpura. The diagnosis in either case can be made without pyelograms, which are therefore definitely contraindicated. Less frequently in congenital polycystic kidneys, tuberculosis and bilateral calculi hematuria is bilateral. Pyelography in polycystic kidneys is indicated for its prognostic value. The clinical picture of interstitial nephritis with palpable kidneys should always suggest this diagnosis. The pyelogram may easily be confused with that of a neoplasm. The arcuate arrangement of the calices, broadening of the bases of the calices and preservation of the detail of the minor calices are characteristic of polycystic kidneys. The pyelogram of the opposite side will invariably be similar.

While renal tuberculosis may be diagnosed with considerable accuracy by the pyelogram, it is unquestionably preferable to establish this diagnosis by staining methods and guinea pigs whenever possible. Pyelographic deformity in renal neoplasm are of two types, depending on the nature of the tumor. In the so-called hypernephroma the deformity is produced by compression and elongation of the calices as the tumor enlarges. One or more calices may be represented by only a very much elongated streak of media which is drawn out to a very thin line. The minor calices lose their detail, or all of the calices and the pelvis may be replaced by

neoplasm. In the papillary neoplasms of the renal pelvis the diagnosis is made by the filling defect caused by the tumor. An identical defect may be caused by blood clot and in cases of doubt a subsequent pyelogram at an interval of several days will show the same defect if due to tumor and a change or absence of the defect if due to clots. A normal pyelogram in the case of a bleeding kidney allows of the opinion that neoplasm is excluded, but the diagnosis of essential hematuria always requires follow-up pyelograms at intervals of two to three months for at least six months.

Summary: Pyelography can be made a valuable aid in general medical and surgical diagnosis. It may furnish positive or negative information. It may diagnose by inclusion or exclusion. While pyelography is not infallible, it may, when considered with all other clinical data, be the only means of arriving at a diagnosis.

DISCUSSION

(Discussion on Paper of Dr. Edward Cathcart, "The Place of Pyelography in Diagnosis.")

Dr. Hugh Cabot (Ann Arbor): This group of papers has been to me very interesting. Of course, they cover a very wide field. Each one of these gentlemen was engaged in trying to round out for us the present knowledge of the subject. I would like to touch on a few points that each has brought out. In the first place, I want to congratulate Dr. Cathcart upon having apparently successfully avoided allowing himself to be classified as a specialist. You will remember, one of the recent definitions of a specialist was, a person who knows more and more about less and less. (Laughter). I think Dr. Cathcart has shown considerable ability in avoiding being driven into that category. I was interested in hearing him point out—and he can never point out too much—that there is a very considerable possibility in any procedure of this kind, particularly in the hands of the enthusiastic, that it may be overused.

I was a little shocked—I think it was about two years ago—when a very eminent urologist advocated in an article that all patients coming to the clinic for urology examination should have a bilateral simultaneous pyelogram. That any procedure of technical kind should be broadcast in that way would do nothing but get such a procedure into disrepute. All of us, I think, see patients in whom pyelography is suggested, and the question raises itself, whether or not we believe it will be of benefit. It seems to me the only sound criterion we can use is whether or not the information which may be obtained by this method is of essential importance to the patient. It seems to me the patient and not the completeness of the scientific study, must be the key to the situation. There are many patients in whom we are aware that a pyelogram will give us information which will be of interest in completing the study, but unless it can be shown that that information is of utility to the patient, it

seems quite clear to me that it should not be utilized.

I was glad to hear him point out the possible fallacies of single observations. With his extraordinary experience a single observation by him is undoubtedly less liable to fallacy than with many of the rest of us. But it has occurred to me over a long series of years that a single observation may be almost flatly contradicted by a second observation under apparently similar conditions.

Discussion on Paper of Dr. R. E. Cumming.

Dr. Hugh Cabot: In Dr. Cumming's paper, I was conscious of the fact that he was cramped for time. There is one possible method of attack upon one group of cases with paralysis of the bladder which he would doubtless have treated at more length if he had had time. It concerns those cases of bladder paralysis, whether congenital or acquired, which are not accompanied by paralysis of the rectal sphincter.

More and more I have come to believe that transplantation of the ureters has a very real place in this field. In patients with epispadias, for instance, and not only the more extreme type, ureter transplantation has been accepted.

But there is this other group of acquired bladder paralysis of which I think we can see more if we can offer them more in the way of positive results. And I believe that there is an increasing field for the transplantation of the ureters which has now, I think, come to be on a sound basis.

I think we can offer the patient by that method a long series of years of comfortable existence, more comfortable than can be had even by the very satisfactory, complete incontinence that Dr. Cumming has discussed. It is a field with which the profession as a whole is not sufficiently familiar. They do not recognize that in the last ten years very great technical improvements have taken place and the operation is now a thoroughly feasible and extremely satisfactory one.

Discussion on Dr. Carl Eberbach's Paper, "Treatment of Pyelitis".

Dr. Hugh Cabot: Coming to Dr. Eberbach's paper, I am inclined to accentuate the point suggested by him that there are some things about pyelitis of pregnancy which entitle it to be classified separately. It is the only group in which there seems to be certain relation between dilatation of the ureter and infection. It is the only group in which spontaneous recovery following the disappearance of the probable cause, that is to say, the pregnancy, is the rule rather than the exception, and it is the only group in which recurrence of the cause is by no means regularly followed by a recurrence of the condition. I think, therefore, that we should approach the pyelitis of pregnancy with a definitely different attitude from what we approach the pyelitis of children or pyelitis of adults not during pregnancy. I agree with him that we do not know the whole story in regard to pyelitis of pregnancy. As far as I am concerned, the explanation continues to be unsatisfactory, that is, that the uterus itself pressing upon the ureter, can cause dilatation. That seems to me absurd since the dilatation begins and is developed to a certain point before the uterus can possibly produce any pressure. I think we must definitely abandon that as an explanation. The other explanations put forward are sometimes interesting, and often possible. None of them, I think, have been proved to be the real underlying factor.

In regard to the question of foci in another part of the body as related to pyelitis, of course, in pyelitis or any other abnormal condition of the body, foci of infection elsewhere are of interest and should be looked into, in the interest of the general condition of the patient. But I cannot subscribe to the idea that focal infections in tooth or tonsil have any relation whatever to an infection of the kidneys. In the first place, the organisms are different. In the second place, treatment of the foci has not in my experience—and I have seen the cases of many other experts—been followed by any permanent or clear-cut effect upon the pyelitis, and unless the effect of these foci be simply upon general conditions, I cannot regard them as related to the process. I often wonder whether the very uneven results which we get from the use of formaldehyd—containing drugs, isn't due to the fact that we haven't the slightest idea how much of the drug our patients are in fact getting.

I go back to the early days of urotropin, when, knowing its very uneven behavior in the clinic, ten of us working in the laboratory as well as in the clinic, undertook to experiment with the drug upon our own persons. We started with taking $7\frac{1}{2}$ grains three times a day and added a $7\frac{1}{2}$ -grain tablet every day.

One of the group had haematuria when taking four tablets; four of the group when taking six tablets; one of the group took 100 grains a day without any symptoms whatever, and examination of his urine showed it contained no formaldehyd. In other words, urotropin would have been equally as well applied to his boots as to his stomach. His urinary tract was getting no antiseptic.

All that was thoroughly developed many years ago, when it was shown that the ability of the urine to break up formaldehyd-containing drugs varied widely with the acidity of the urine and that could not be tested by the ordinary litmus paper methods.

It was very simple to test the amount of formaldehyd actually in the urine, and by somewhat more complicated methods, the actual acidity of the urine, (hydrogen ion concentration of the urine) could be determined.

I am inclined to view the thing in this way, before we make a final judgment we must have a larger series of cases in which it is quite clear precisely how much formaldehyd is in the urine, how much of the drug is being put into their mouths and excreted by the kidney and other parts of the body.

I am as yet unable to make any final judgment on the value of that group of drugs until a more detailed study has been made as to what they are actually doing in the way of breaking down into their component parts.

And finally—I think Dr. Eberbach stressed this point, but I would like to take a crack at it myself. The greatest single factor in the failure of pyelitis of all types to respond to treatment is, they are still being treated with an incomplete knowledge of facts.

I saw only the other day a child of seven who had been treated for five years by experts in various parts of the country for pyelitis. That child's urinary tract had never been examined. Examination showed that child had a bilateral congenital dilatation of both ureters and both kidneys and pelves, and no method of treatment would produce any beneficial results.

It would have been perfectly simple five years ago to determine those facts. They were not de-

termined until after five years. A great majority of the patients who have been treated after they had chronic pyelitis—I am not discussing acute pyelitis, but chronic pyelitis, should not be treated without facts. Nine cases out of ten today are treated over a period of weeks, months or years without the facts, and until we stop this and start with the facts as a basis of treatment, we are in no position to criticise our results.

My own view is that the disease is not more intractable to treatment, given all the facts, than a great many other conditions with the treatment of which we are relatively well satisfied. But we are now shooting at them all over, with methods that do not depart far, as I think, from the old shotgun prescriptions of our grandfathers, at which we now laugh. We do the same thing ourselves with somewhat more instrumental machinery. We don't get the facts before we start, and we can't law down a prognosis of chronic pyelitis until we start a treatment based on facts. (Applause).

Discussion on paper of Dr. R. E. Cumming, "Bladder Paralysis, Its Etiology, Prognosis and Treatment."

Dr. H. W. Plaggemeyer (Detroit): I am most interested in Dr. Cumming's paper, naturally, having been working along that line for a long period. He said at the beginning of his remarks, a rather striking thing—that every specialty in medicine or surgery has its enigmata. I think that is true, and in urology particularly do we have our enigmata to go through with. One of the worst types we have to handle is the question of vesical paralysis due to whatever cause. There are two outstanding types—syphilitic, chronic and longitudinal, and the other type which comes from fractures or various causes. In most of these cases we have retention, and all I want to bring out is this one point, not to catheterize these patients, who will establish a paradoxical incontinence.

That can be established, as has been pointed out, by a number of methods. Any stimulation, as shown by Dr. McClintic in his recent paper, will have a tendency to make that patient establish a paradoxical incontinence. That is not what the patient wants. It is not what the family wants, and particularly in the country, away from a large medical clinic, it must be distressing to have them constantly dicker. The point is, these patients succumb rapidly to infection.

As Dr. Cabot long, long ago pointed out, the average normal bladder is almost immune to onslaught unless that onslaught be due to a massive infection. That is also true in necrosis.

Discussion on Papers of Drs. Cumming, Eberbach, and Cathcart:

Dr. Robert Rosen (Detroit): I was very much interested in the papers, especially the part of Dr. Eberbach's paper where he mentioned that body resistance will generally overcome infection in the acute cases. A particular phase I recall clearly, while working with a drug that you are not familiar with; one of the forerunners of mercurochrome. That drug in minor quantities produced antiseptic urine. Applying the drug to the human body, we also obtained sterile urine in very minor quantities, regardless of the weight of the individual. But when applied to pathological cases, the drug did not work. So the inference was that the kidney itself, probably stimulated by this drug, had been throwing off a sub-

stance that produced antiseptic urine, but that when the kidney is slightly damaged this virtue is lost. That is the only conclusion we could arrive at.

There is one other fact that I want to mention. In using silver nitrate through accident, two cases that had been treated for over five years with silver nitrate—1 per cent and 5 per cent—this one particular time, instead of using 1 per cent silver nitrate, 20 per cent was used.

I was fortunate enough to have them under observation, and I surely thought that would take care of the infection. The cultures that we made showed absolutely no effect. Both of these cases recovered from the 20 per cent silver nitrate, although there was hematuria and they had quite a stormy siege with it.

The drug referred to above could produce sterile urine in the normal kidney, and that is what made me mention that in Dr. Eberbach's paper he claims it doesn't make any difference what drug you do use.

In acute cases I don't think it is advisable to use any instrumentation at all. I may be wrong, but I have seen a number of cases recover without any other treatment than forcing fluids.

Now I just want to make one more remark in regard to using hexamethylenamin, in regard to formaldehyd. I think if we use drugs, we should cut out the fluids and concentrate on the drug, and we might be able to detect formaldehyd. In other words, either give fluid and cut out the drugs, or cut down your fluid and use drugs. (Applause).

Discussion on Papers of Doctors Cumming, Eberbach and Cathcart.

Dr. C. F. McClintic (Detroit): There is one thing the general practitioner forgets. That is, the typical automatic bladder observed in acute transverse myelitis, is the same type of mechanism they are born with. In other words, in the babe at birth there is present an automatic bladder, and if we stimulate the mechanism which controls this bladder, we get phenomena described by others and known as sufficient for bladder emptying.

Dr. Cumming mentioned the fact that the nerves might be severed from the bladder. In other words, to sever the nerves to the bladder, two procedures are open. One is to open the abdomen and sever the sympathetic after the fibers leave the central nervous system. The other is to adopt the old method that the urinary surgeons first used, of doing what we call a rachiotomy, for access to the nerve groups at the end of the cord.

I would like to emphasize another procedure that, due to the development found in urinary surgery, I feel is certainly less formidable than rachiotomy.

Our first procedure was to cut the nerve roots. This is a great shock and often fatal, but when successful, the patient is relieved from pain. But due to difficulties in that procedure, in order to relieve pain, the urinary surgeon cuts the cord, which transmits the pain impulses.

I would like to suggest, in these cases of which Dr. Cumming tells us 60 per cent who have the trouble die of pyelitis, the idea of transection of the cord, complete severance of the cord. If you do this in the lower lumbar region you get complete automatic control of the rectum such as is found in the infant. This operation is not formidable. I would prefer to have that done than

the transplantation of the ureters into the rectum, as suggested by Dr. Cabot, because my experience has been that there is a tremendous shock accompanying this operation if you don't get severe toxemia.

The operation is not a formidable one. The small vessels of the cord are ligated or caught with clips and a transverse cut is made through the cord, producing what the physiologist speaks of as reflex cord. That will give a perfectly automatic bladder, and in that condition the patient will soon learn, so that you have a perfectly functioning automatic bladder.

The explanation of that is that all of the organs, no matter whether stomach, heart or bladder, or ureter, when severed from central nerve connections, become automatic. The reason is that the physiological property of plain muscle is that of rhythmic, automatic, conductivity. You get a type of dual muscular mechanism.

The transection of the cord has been done in this country and in Europe in several of the clinics. As I say, I do not regard it as formidable, and it can be done more comfortably than the other procedures.

Reply to Discussion on Paper of Dr. R. E. Cumming, "Bladder Paralysis, Its Etiology, Prognosis and Treatment."

Dr. Cumming: I was delighted to have Dr. Cabot agree to the importance of summarizing our knowledge of bladder paralysis, especially for the medical public. There is still a great deal of opposition to our own ideas, which incidentally I have stated were not original with us.

I am grateful to him also for bringing up the point relative to transplantation of ureters for bladder paralysis. And at the same time I think Dr. McClintic misunderstands his remarks. I think they are speaking of an entirely different supposition.

For those cases where the rectum is not involved, and where there is no bladder at all, his method is certainly ideal and should commend itself to us. As I say, I am grateful that he added that to my own feeble efforts. I feel, as Dr. McClintic said, however, that his idea as suggested in the paper of coddotomy or some other furthering of the paralysis of the bladder by means of destruction of nerve control is less formidable than transplantation of the ureters, and I see Dr. Cabot agrees. As Dr. Plaggemeyer indicates, the observations are based on long series of cases as well as abundant autopsy material. I would like to correct Dr. McClintic's statement that I said that 60 per cent of the tabetic cases die from infection. I was quoting from Dr. Keyes' text book, and he was quoting from Barney, to the effect that 50 per cent die from renal infection.

Reply to Discussion on Paper of Dr. Carl Eberbach, "Treatment of Pyelitis."

Dr. Carl Eberbach: I think Dr. Rosen misunderstood what I meant to say about the treatment of acute renal infections. It is not customary to treat instrumentally the acute infections, since, as a rule, they clear up promptly, and often satisfactorily by the forcing of fluids and urinary antiseptics. We do use it occasionally in acute pyelitis in pregnancy, simply because the lesion is usually a serious one and the infection is almost immediately relieved by it. But we do not recommend it as a usual procedure for infection.

IMPORTANCE OF IMMUNIZING PRE-SCHOOL CHILDREN AGAINST DIPHTHERIA

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DETROIT, MICHIGAN

In the October number of the American Journal of Public Health is a paper by Walter W. Lee, M. D., Epidemiologist of the Indiana State Board of Health, on "Diphtheria, Its Treatment and Prevention." The paper presents some calculations which bring out sharply the importance of considering the young age groups in any campaign of prevention.

In order to make these calculations apply to the situation in Detroit, the 1925 population data, together with the deaths from diphtheria by age groups, in 1925 to 1927 inclusive was used. These years include a low and a high death incidence so that the average may be considered a fair figure to use in the calculation. The question is "what is the relative importance of immunizing a child 1 year old and one who is 14 years old?"

The following three tables have been prepared from data on file at the Detroit Health Department.

TABLE A

Age group by years	0-4	5-9	10-14	15-19
Population	128,467	122,390	103,310	82,839
Deaths from diphtheria (Average for 1925, 1926 and 1927)	129	79	19	2 1/3

TABLE B

Death rates per 100,000 children.				
Age group by years	0-4	5-9	10-14	15-19
Rate	100.4	64.5	18.4	2.8

TABLE C

Ratio of probability of death in each age group, on basis of 10-14 group being one (1)				
Age group by years	0-4	5-9	10-14	15-19
Ratios	5.45	3.5	1	

In one year the 14-year-old will be in a relatively non-susceptible age group while the infant will be for 14 years in a relatively high susceptible age group. The infant will be in the 10-14 year group for five years. While in this group, his possibility of dying of diphtheria is the same as that of five children who are 14 years of age.

The infant while in the 5-9 year group will have his possibility of dying of diphtheria increased three and one-half times over that of the time the infant will be in the 10-14 year group. (See Table C.) Hence, in the 5-9 group, his chance of dying of diphtheria is the same as at least 17 children 14 years of age.

While the infant is in the 0-4 group he will have his chance of dying of diphtheria increased 5.45 times over that of the time

he will be in the 10-14 age group. (See Table C.) Hence in the 0-4 group his chance of dying of diphtheria is the same as 27 14-year-olds. Thus, the immunization of an infant at six months to a year of age is equivalent to the immunization of 5 plus 17 plus 27, a total of 49 14-year-old children.

The above calculations may be summarized by adding together the equivalent number of 14-year-old children, as indicated in the following table:

TABLE D

Showing the relative value of immunizing a child one year of age and one fourteen years of age.		
One Year Old Child	Age Groups	Equivalent number of 14-Year Old Children
1	10-14	5
	5-9	17
	0-4	27
		49

Hence it appears that the immunizing with toxin-antitoxin of a 1-year-old child will, so far as preventing a death from diphtheria is concerned, accomplish as much as immunizing 49 children who are 14 years of age. This shows the importance of concentrating preventive measures of this kind on preschool children. The same amount of work on preschool children will accomplish much more than on school children.

There is another interesting deduction to be made, as pointed out by Dr. Lee. If we prevent one death from diphtheria in any age group, we lower the total number of deaths by one. Now, in referring to Table A it will seem that if we could protect 1/129 of the age group 0-4, which would be about 1,000 of these children, it would be possible to prevent one death. Likewise in the second age group, 5-9, it will require 1/79 or about 1549 of this group to be immunized before we may expect to prevent one death. Again in the third age group, it will require 1/19 or about 5,437 of that age group, to be immunized before one may expect to prevent one death. This shows how much greater

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an advantage it is to concentrate effort on the younger age group.

At first thought it might appear that the calculations above do not agree, but please note that data in Table D applies to a child 1 year old as compared with a child 14 years old, while in the last calculation, the age group 0-4 is compared with the age group 10-14.

Dr. Lee points out one more interesting point, namely that in the experience of Syracuse, N. Y.; Auburn, N. Y.; Hamilton, Ontario, and New Haven, Conn., and other cities, when half the children have been immunized with toxin-antitoxin, diphtheria is nearly eliminated.

In this connection our own experience in 1926 is of interest. A very virulent type of diphtheria appeared in June and continued above the normal throughout the summer. Toxin-antitoxin immunizations had never been tried on a large scale in a large city for the purpose of controlling an outbreak, but the results obtained in smaller cities were known. The Board of Health, in co-operation with the physicians, decided to put on an intensive campaign to get a large number of children immunized. During October and November, 47,000 children began to receive toxin-antitoxin prophylactic. About the first of December the incidence of diphtheria began to subside and soon was below the normal and has remained there most of the time since. The following chart shows in a graphic way, the incidence of diphtheria before and since that campaign.

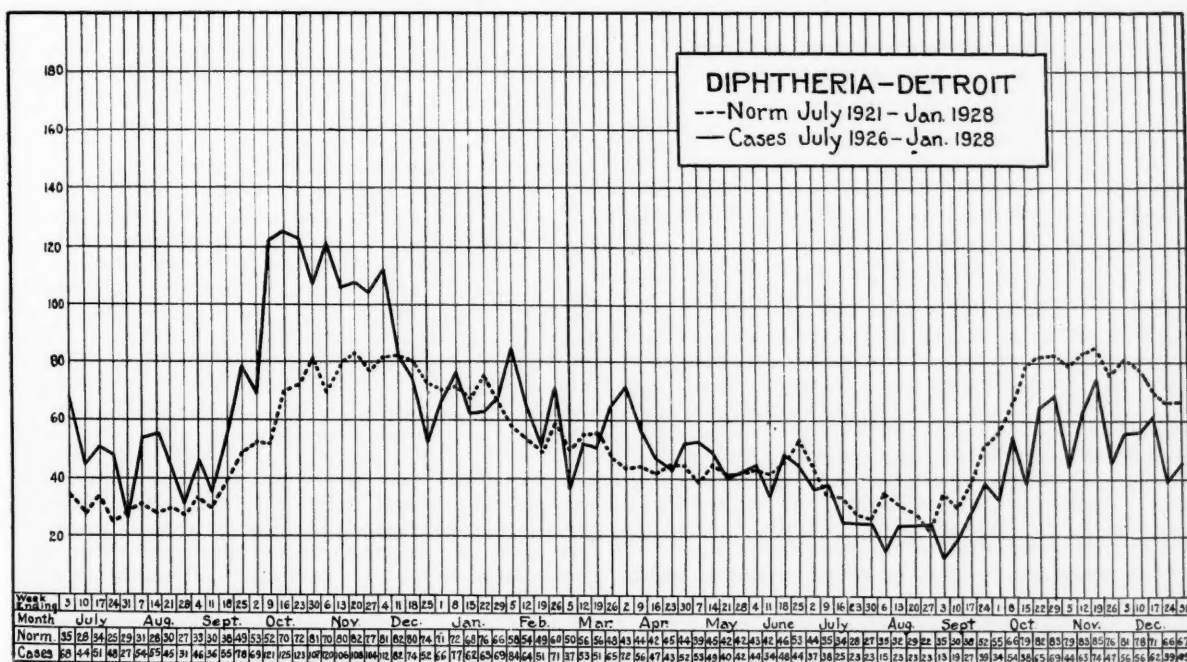
The question regarding the sensitization

of children to horse serum has been raised. Dr. J. E. Gordon, Chief Resident Physician at the Herman Kiefer Hospital, has produced data which would seem to indicate that children are often sensitized to horse serum by the older forms of toxin-antitoxin. However, this sensitization should not prevent the use of diphtheria antitoxin when indicated. Only a little more care should be used by the physician when antitoxin is given children who were immunized by former preparations of toxin-antitoxin.

The new preparations of toxin-antitoxin made with antitoxin from goats or sheep have been under investigation during the past year in respect to their sensitization to horse serum, and to their immunizing power against diphtheria. Dr. Gordon has shown that these new preparations do not sensitize to horse serum.

During the first part of 1928, Dr. Donald J. Barnes, who has charge of our Child Welfare Work, and Dr. Don W. Gudakunst who is in charge of our School Health Service, undertook to determine the efficiency of goat serum toxin-antitoxin. This toxin-antitoxin was used only at two clinics. Six months later the parents were invited to return to the clinic with their children who had received three doses of goat serum toxin-antitoxin, for a Schick Test. Seven-hundred eighty-one tests were completed.

Dr. Gudakunst has compiled the following table which compares the results obtained with the old and the new kinds of toxin-antitoxin. (The toxin strength of



the two toxin-antitoxins was the same). This table shows the results of Schick Tests on children six months or more after immunization during the last two years.

Source of Children	Number Schick Tested	Number Positive	Number Negative	Percent Negative
Schools 1927.....	4,005	1,434	3,133	78.8
Clinics 1927.....	10,735	2,738	7,997	74.5
Schools 1928.....	10,551	2,712	7,839	74.3
Goat T. A. T. 1928.....	781	151	630	80.7

This table shows clearly that the goat serum toxin-antitoxin is fully as efficient as the toxin-antitoxin used formerly. Eighty per cent of the children who received goat serum toxin-antitoxin were found to be Schick Negative as compared with 74 per cent when the older form of toxin-antitoxin was used. This work has led this Department to provide goat serum toxin-antitoxin during the campaign this fall.

A small percentage of children is not made immune by toxin-antitoxin as indicated by the Schick Test and by the occurrence of clinical diphtheria. These children may develop diphtheria when exposed to an unusually large, or virulent infection. Immunity is a relative matter. Toxin-antitoxin will protect against the usual diphtheria infection, but if the child is exposed to an unusually large number of diphtheria bacilli or to especially virulent bacilli, the protection may not be sufficient to prevent a case of diphtheria. Parents should watch their children and if illness develops, a physician should be called who will decide the necessary treatment. We

can safely say that toxin-antitoxin treatment protects against the usual infection of diphtheria and will make a severe infection less injurious.

In summarizing this paper the following points have been made:

1. In Detroit the records for the last three years show that so far as the prevention of deaths is concerned, the immunizing of one child six months to one year old will accomplish as much, as immunizing 49 children 14 years of age. The ideal group of children to protect with toxin-antitoxin is from six months to 18 months of age.

2. It will be necessary to immunize about 1,000 children in the age group 0-4 to prevent one death from diphtheria; and one will be obliged to immunize 5,443 children in the age group 10-14 to prevent one death from diphtheria.

3. Goat serum toxin-antitoxin is as efficient as preparations of toxin-antitoxin used in the past, and has the added advantage of not sensitizing to horse serum.

4. Large or virulent infections with diphtheria bacilli may overcome the immunity that has been established by toxin-antitoxin. Parents must be warned to have sore throats of children, even if the child has been treated with toxin-antitoxin, examined promptly by a physician who will decide what to do. It can be safely maintained that toxin-antitoxin treatment protects against the usual infection of diphtheria and will make a severe infection less injurious.

ARISTOTLE, THE FIRST SCIENTIFIC BIOLOGIST

Aristotle was the first prominent scientist to begin the scientific collection of data about animals and the first to begin the systematic classification of animals. He believed in a teleology holding that each species of animal is internally involved, its end being to grow and reproduce its kind.

Neuburger, criticising Aristotle's system of anatomy and physiology, said:

"The intermingling of speculation and empiricism is well shown in Aristotelian anatomy and physiology, both of which he treated from a teleological point of view, and remained through many centuries models of scientific perfection. In anatomy, Aristotle was not neglectful of the labors of his predecessors, and of Diocles amongst contemporaries, nor did he fail to advance the subject particularly in the knowledge of the vessels; but it contained many serious errors, arising partly from unwarranted deductions drawn from the results of zoological dissections, and also partly from preconceived opinions."

That criticism is just; but Aristotle's work could not have been otherwise under the circumstances. The medical sciences were newly founded, and Aristotle was largely dependent upon his own dissections and observations for the

data of his conclusions. Considering the paucity of the facts at his command, we should be astonished with the great value of the work he did for medicine.

The contributions of Aristotle and the contemporary dogmatists to the progress of the healing art were not only in anatomical, physiological and biological studies, but also in scientific methods, classification and experimentation. Few men in any age did so much as Aristotle in that respect. His work, generally speaking, marked a new era in medicine and caused a revolution in thought among doctors in all countries. His writings were immensely popular and his lectures were quickly translated into all the principal languages and dialects of the time. His teaching and that of contemporary writers and critics circulated among the doctors of all localities and led to debates as keen as any that followed the publication of Darwin's books. This great Greek philosopher stimulated thought in ancient medical circles as no previous writer had done. Equally great as a biologist, anatomist, physiologist and logician, Aristotle should be ranked among the greatest men in medicine.—The Physician Throughout the Ages.—New York Journal and Record.

THE ORTHOPAEDIC TREATMENT OF POLIOMYELITIS*

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In view of the fact that infantile paralysis is making headway everywhere in the form of small epidemics which are gradually becoming more numerous, it is important for all of the men who practice medicine and surgery to have a clear idea of the principles of the treatment of infantile paralysis.

In the first place, we do not know the exact cause of the disease. The individual germ or organism responsible for infantile paralysis has not been definitely established. There are no means of protecting patients against infantile paralysis. Rosenow's serum perhaps may be of advantage, but we can not prove it. The serum from recovered cases of infantile paralysis, I think, undoubtedly would be of benefit if it could be given in large enough quantities. The trouble with these various preventives and cures is that we cannot properly evaluate them. Out of 100 cases of infantile paralysis in the hospital, we may select 6 or 8 of them practically identical with the next 6 or 8. We may treat part of them with Rosenow's serum, part of them with convalescent serum, and part of them with nothing at all, and find no facts of value. One cannot say that there is any scientific method of proving that any of these methods do any good. The question, therefore, has to be held in abeyance until we find the actual germ and make a specific vaccine or serum. We do not know the method of transmission.

I think among most of the men who see a great deal of this disease, the belief is beginning to be quite firm that the infection is very widespread, that in the case of a few individuals coming down with infantile paralysis undoubtedly a very large number of people in that same locality have been exposed to and infected with this organism. Yet only a very few of them become paralyzed, and all of our scientific research workers to the contrary notwithstanding, we cannot tell a case of infantile paralysis with certainty unless the patient is paralyzed and we may almost say that unless the patient is paralyzed he has not infantile paralysis, yet undoubtedly the examination of the spinal fluid in many cases would show contributory evidence to its being infantile paralysis. There are no perfectly distinct characteristics in spinal fluid, so there we are; cannot pre-

vent it, cannot cure it, and cannot modify it.

In case we get another epidemic such as New York had, 16,000 cases in one fall, it is perfectly obvious that trained orthopedic men cannot take care of such an enormous number. The general practitioner will have to take care of the majority. All of our big cities will have a similar epidemic of infantile paralysis unless somebody can find the solution for it and make a vaccine or provide for immunizing patients in some other way.

The only real point that has been made in the last year is that two definite milk-born epidemics have occurred and have been investigated. It was found that some individual at the headquarters of the milk delivery system had infantile paralysis. It has therefore been proven that the germ may get into the milk and if it does an epidemic will result, but this is not the usual method of transmission.

A child is lying in bed with infantile paralysis. There are probably some muscular pains which will not disappear until sometime later. The most frequent site of the paralysis is the muscles of the legs, particularly below the knees. The individual selective paralysis of muscles in my experience has been of the anterior tibial group so that drop foot results. The next most frequent site is the quadriceps extensor muscles of the thigh, so that the leg cannot be extended on the thigh. Next, paralysis of the big calf muscle, so that the heel drops down and a calcaneus foot develops, where the patient walks on the tip of the heel bone and the ball of the foot is cocked up in the air. Next, the hamstrings and some of the other muscles of the thigh and leg. What are we going to do? The healthy muscles have normal tone. The paralyzed muscles do not oppose the normal tonic pull of the healthy muscles and gradually contractures of healthy muscles begin. If the leg is completely paralyzed, no deformity occurs at all ex-

* Presented at the Second Annual clinic of the Highland Park Physicians Club, held December 1, 1927. (This is a stenographic report of an extemporaneous address. It has been submitted to the author November 28, 1928, and therefore represents the author's views at the present time.—Editor.)

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cept what deformity may occur by force of gravity as the child lies in bed on his back. Gravity will pull the feet down and gradually contracture deformities will occur through normal tonus, normal pull by unopposed healthy muscles. We must therefore prevent such pull occurring and in some cases it is extremely difficult.

If we see these children in the early stage with pain, having had the ordinary symptoms of infantile paralysis, what are we going to do for them? There is where one of the most important parts of the treatment comes in. We cannot do anything to modify the disease, but we can do much to keep deformities from occurring.

The two most common deformities are: First, almost constantly, drop foot, which has to be prevented by a light splint made of wire properly bent and bandaged on to hold the foot up at a right angle or a posterior moulded plaster of paris cast, or a couple of pieces of board fastened together to make a right angle splint. That is all that is necessary to hold the foot up properly unless there is a very strong contracting pull of the big calf muscles, in which case it is difficult to prevent the foot drop, but it can be prevented by constant care. The fact is that in nearly all cases which are not taken care of by specialists, or by careful men, foot drop does occur and is very difficult to relieve. The second most frequent deformity is one about which most men know little, and that is the contracture of the tensor fasciae latae of the thigh. It occurs in this manner. As the child lies in bed the thighs are apt to fall apart, abducted, rotating outward and becoming flexed at the hips. A great many people lying in bed assume that position automatically and it happens in many cases of infantile paralysis. One of the few muscles in the upper thigh which remains not paralyzed is this tensor fasciae latae, which ordinary surgical or medical men do not think of once in ten years, yet this muscle becomes contracted strongly and when one tries to bring the abducted thigh into the straight line he cannot do it. In order to bring it straight, the lumbar spine goes into a position of lordosis. It is easy to prevent this deformity; simply pin towels around the knees to hold the legs side by side and parallel in bed and retain them that way night and day. This will prevent this very important deformity. After it has once occurred and become established it is a very formidable task to relieve the deformity. It sometimes cannot be done in

a deformity of only a few months standing, cannot be done by putting on Buck's extension with weight and pulley traction because Buck's extension only increases lordosis in the lumbar spine and very seldom pulls out the contracture of the tensor fasciae latae. After a few months it can ordinarily be relieved only by an operation which is quite a formidable procedure. It means peeling off all the muscles on the crest of the ilium, pushing them downwards along crest of the ilium and allowing them to reattach themselves at a point on the surface of the ilium 1 inch to 1½ inches below their original insertion. Operation is further undesirable in that it makes a bad looking hip, a considerable defect in the outlines of the hip, so that prevention is much better than cure. In nearly 50 per cent of the neglected cases that come to orthopedic surgeons, we find this deformity present.

The first thing to do in an early case, then, is to hold the foot up at a right angle and keep the knees tied together, and in this way we will not get any serious deformity in the legs. This treatment has to be carried on with rest in bed, no other treatment of any kind except attention to bowels and attention to the prevention of deformities until all pain has disappeared. Roughly speaking, we may call this the first stage, that is, from the onset of the disease until all of the pain has disappeared.

Why it is I do not know, but it seems to me that the cases occurring nowadays have more pain than they used to and the pain lasts longer; moreover, the attacks do not come on as suddenly as they did 30 years ago. In those days most of our cases gave a history of the child being perfectly well, or perhaps having a little headache, perhaps vomiting once or twice, and then suddenly, out of a clear sky, becoming paralyzed. Nowadays it seems to me that in the last 10 years more cases have been having a slow onset with a slow paralysis which does not reach its peak perhaps until 72 hours after the onset and causes a great deal of pain.

We must keep the child perfectly at rest during the painful stage; no electricity, no massage, nothing except attention to bowels and bladder, nourishing food, and prevention of deformities. After that stage, which may last six weeks, but ordinarily lasts about four weeks, the prevention of deformity must still continue; but in addition we must begin to try and educate the child to use some of the paralyzed

muscles. This requires much tact and patience, so any relative or nurse who can be taught to interest the child in trying to make movements of his toes and legs is of great value. People who do not have the ability to get this work out of the child should be replaced by someone else.

In Chicago we have a large number of visiting nurses who are maintained and who have been carefully trained in infantile paralysis work and who will go and care for and visit several times a week any child whose parents are unable to pay for a private physician or nurse or muscle trainer, and these girls do extremely good work. Nowadays it is uncommon for any patient in Chicago to come to us with a deformity or without proper muscle education. It makes the life of an orthopedic surgeon a great deal easier.

We still have many cases coming in from the country about Chicago who have not had these advantages, and have been totally neglected, and must have the most extreme measures in orthopedic surgery before they can be improved.

The muscle training then is the next important factor in the treatment of infantile paralysis. We all quarrel among ourselves about the value of electricity. I do not think electricity is of the slightest value in the treatment of infantile paralysis. It is one of those things like convalescent serum and Rosenow's serum, whose value cannot be proved. I do not think it worth the time or money of any person in moderate circumstances to go to the expense of using electricity. This statement has always brought about a good deal of discussion. I have found a number of men who believe that electricity does a great deal of good and they are just as well able to prove their point as I am to prove mine. I have had many cases where it has been used where no benefit has been observed.

I believe that muscle training and prevention of deformities are the two factors of the greatest importance in the second stage of infantile paralysis; and that stage lasts two, three, or more years, during all of which time deformities must be prevented. The children must be encouraged and stimulated to use the paralyzed muscles to the greatest extent that is possible. It is a long, hard pull. It is during that second stage that the unfortunate parents may drift away from the doctors who know about it, and go to various charlatans, of whom I know there are a few in Detroit, and may become the victims of many illegal kinds of practitioners. It is

quite a rare thing nowadays to have patients brought to me for consultation or treatment who have not been the rounds of these charlatans, chiropractors, osteopaths, and all other kinds of paths except the paths of righteousness. I have been told by many intelligent people that there are chiropractors, for example, who tell the patients and their parents that with a few treatments of the "dislocated vertebrae" in the back a perfect cure of infantile paralysis can be made. This is not the case. The osteopaths, I think, are becoming much better educated and are telling people fewer lies than they used to because a good many people have come from osteopaths who have not been told that their vertebrae were out of adjustment, and they have not been promised as much as they used to be promised. I am beginning to have a better opinion of the osteopaths than I formerly had. I think they do a great deal less harm than they used to do and I think they are getting better all the time. However, they are not the subject of this discussion. Almost all of the patients seen by men of this kind are told that they would be cured in a little while, and the result is that in the majority of these cases about one year is spent in going around and trying the various quacks recommended by friends. Nowadays people are much better informed and much better educated than they used to be. Most people are beginning to realize that honesty is the best policy, and they come back to men better experienced who know the real pathology. After several years we usually find some permanent residual paralysis. Certain groups of muscles are apt to remain paralyzed and something definite must be done. The children are beginning to get deformities of the feet, legs, or spine which even carefully applied braces will not prevent.

About 1890 it began to seem evident that more should be done for infantile paralysis cases than had been done before and it was about that time that Nicoladoni conceived the idea that some of the healthy muscles might be transplanted so that they might do some of the work of the paralyzed muscles. He popularized the operation, but after a while it was found that the tendon transplantation alone did not sufficiently control the twisting powers of the foot, and the feet, which at first held up pretty well, began again to get twisted out of place. In the knee, however, it worked well. If the quadriceps extensor be paralyzed so that the leg cannot be

straightened out at the knee, but the hamstrings remain powerful, the external hamstring, the biceps, can be transplanted around to the front of the knee, inserted in the patella, and provide an enormous and very satisfactory supply of muscle for straightening out the leg. It does not do all the work that the quadriceps muscle does, but it helps a great deal in walking, especially if the semitendinosus also is used. Another place where it is of distinct benefit is in the foot, where the tibialis anticus has become paralyzed and the patient has foot drop. If the tibialis anticus is the only muscle paralyzed it is very simple to aid and practically replace this muscle by use of the toe extensors and possibly one or two lateral muscles to provide dorsal flexion of the foot. The trouble in the foot is that there are usually some more paralyzed muscles, some of the smaller muscles, but rarely the flexor brevis of the foot. It is a curious thing that up to this time I can recall very few cases of infantile paralysis where the flexor brevis of the toes was paralyzed. Almost every case that I have seen has still been able to flex the toes a little by use of the flexor brevis.

We find, then, that the weight of the body on a foot, which is a little unstable, is going to produce a deformity. The deformity is usually a lateral one, either inversion or eversion of the foot. It becomes very disabling and very hard to control by braces and this is where the second epoch of surgery in infantile paralysis began to take its place. We found that tendon transplantation alone did not control the lateral deformity of the feet, that in a few years the twisting of the foot to the outer or inner side would again begin.

This was very forcibly brought to my mind because many of us, just before the war, were doing many of these tendon transplantations. We did a great many and then went into the service and remained in the army for two years. At the end of that time, when we went back to hospital work we began sending out for the tendon transplantation cases which we had operated at least two years before, and the results were very disheartening. Many of my patients showed good function of the transplanted muscles, but had developed severe deformity of the foot. In all these cases, whatever deformity had existed at the time of the tendon transplantation had been corrected by tenotomies or osteotomies. These deformities kept on increasing and it became evident that the

ordinary tendon transplantations were not sufficient, the results were not good enough for us to keep on doing this delicate and difficult work without something further. We then began to appreciate the enormous importance of stabilizing the feet, not making them ankylosed at the ankle joint, but fastening together the small joints in the feet which allow rotation inward and outward. At first the astragalo-scaphoid joint was believed to be responsible for the lateral deformities, but then it began to be evident that although we fastened up this joint, the results were still unsatisfactory. Some of our wiser heads began to investigate the subastragaloid joint, and discovered that if this joint were made solid, as well as the medio-tarsal joint, a foot would be obtained which would be a good and stable foot. One thing that made me think about this was the observation that people, after amputations, walked very well with artificial legs and feet in which the artificial feet have only the power of flexion and extension. We thus reasoned that in paralytic feet which were twisting one way or the other and becoming unserviceable, if we made those feet into a semblance of artificial feet with motion at the ankle joint and with no lateral motion, we should then approach the maximum of efficiency. These operations have been practically standardized for a number of years so that competent surgeons who choose to read literature on the subject can so stabilize a paralytic foot that it will no longer become distorted. If any strong muscles are still pulling the foot out of shape, these muscles can be transplanted into the front or back of the foot so that they will give good power of flexion and extension and assist in the locomotion without producing any deformity. Most of our work of the years past in the simple transplantation of tendons, however well done, was done on an incorrect theory. At the present time we bend our efforts to making a foot which will be strong in flexion and extension, obliterating entirely the power of moving the foot laterally. We are doing many of these operations now and they, fortunately, are standing the test of time. It is safe to say that practically every case of infantile paralysis which has some permanent residual paralysis can be improved by surgery. In many cases a cripple can be made an efficient wage earning, self-supporting individual. There are some patients whose paralysis is so extreme that the patient cannot be made to walk, but,

fortunately, there are very few of them, and the farther along we get, the more cases we see who can be gotten up and made ambulatory, either with braces, or in most instances without braces. Where the back is seriously deformed, some of

the vertebrae can be fastened together by an ankylosing operation so as to prevent further deformity. This is a marked advance, as scoliosis due to infantile paralysis has been impossible to control by braces or apparatus.

FUNCTIONS OF THE SANATORIUM*

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The question is frequently asked, when is the word sanatorium used, and when sanitarium? Prior to the establishment of institutions designed especially for the treatment of tuberculosis, the word sanatorium was rarely used. Of sanitariums there were many, but the word sanitarium was applied more generally to institutions for the treatment of mental and nervous disorders, or to other diseases, the treatment of which consisted largely of physiological therapy, combined with hygienic and dietetic measures.

The word sanitarium is derived from the Latin "sanitas" signifying or pertaining to health, and is more properly used to designate a place considered simply as especially healthful—a health resort, or a place for those convalescing from some disease.

The word sanatorium is derived from "sanare" to heal, and is more properly applied to any place devoted to the healing of disease or bodily infirmity. The word might properly be applied to hospitals as well, but common usage has limited it to institutions devoted to the treatment of some particular disease.

The first sanatorium for the treatment of tuberculosis was established by Brehmer in 1859 (Goerbersdorf), and he used the word "Heilanstalt", signifying a place for healing. In America from the time that Trudeau established the first institution for the treatment of tuberculosis at Saranac Lake, the name sanatorium has been generally used, as it more nearly approximates the meaning of Brehmer's, "Heilanstalt", or healing place.

Primarily, then, the function of the sanatorium is to afford a place for the treatment, and the healing of his disease, if that be possible, of a person afflicted with tuberculosis. To the individual patient, it goes without saying, that his own restoration to health seems the most important function of the sanatorium, and so it is in his particular instance, but considered in its broader aspects, the benefits which may accrue to society in general, constitutes a much more important function, than the curing of the individual patient.

The methods of utilizing these two func-

tions of the sanatorium, as relates to the *individual* and to the *public*, will now be considered as well as the writer is able to do within the limits of this paper, and inasmuch as this discussion is intended for laymen and women, rather than for members of the medical profession especially, scientific terms, and technical methods will be avoided as much as possible.

THE PATIENT

What are the methods usually employed by the sanatorium to assist him in regaining, and retaining, his health?

The sanatorium treatment of tuberculosis from the beginning has been based upon three cardinal factors, fresh air, proper food, and rest, and, with the addition of some refinement of carrying them into effect, these still constitute our chief armamentarium in combatting the disease.

For a long time prior to the beginning of the sanatorium era, it had been believed that fresh air was the most important factor in the treatment of tuberculosis; that if a person afflicted with the disease, could remain in the open air, and more particularly if that open air could be had at a high altitude, with a minimum of humidity, a cure could most readily be effected. It is just as true now as it ever has been that fresh air *is* essential, and that climate may exert *some* beneficial action, but neither fresh air, altitude or climate of themselves may be considered as specifics in the treatment of tuberculosis.

Early in the sanatorium history, buildings were of the simplest and most inexpensive construction. A plain log or board shack, entirely open on one side, and if possible, built in a pine forest was considered the proper thing in the way of a

* Delivered at 20th Annual Meeting of Michigan Tuberculosis Association.

building, the patient remaining in the shack, exposed to all the vicissitudes of weather. In fact it seemed to be rather assumed that the greater the exposure and suffering of the patient, the more likely was a cure to be expected.

In the early nineties of the last century, came into sanatorium construction the King leanto which offered some advantages over the forest shack. This consisted of two wards or wings of a building capable of accommodating eight or ten beds each, these two wards being connected by a warmed central dressing or living room in which bath and toilet facilities were provided. The patient wards were entirely open to the front, except that screens were sometimes provided to exclude flies and mosquitoes.

Then came greater comfort to the patient in the form of warmed dressing corridors in the rear of the patients wards. Still later came the era of individual sleeping porches for the sanatorium and the advantages of these became so manifest to the general public that today there is seldom a well planned house that does not have one or more sleeping porches. All this for the purpose of securing fresh, pure air at all times, which is of course most essential.

The *second* of the sanatorium trinity is food. Not only proper food, but for a long time forced feeding was practiced. In addition to three regular meals it was thought necessary for the successful treatment of tuberculosis, that the patient should have from six to ten eggs daily, with two or three quarts of milk, together with a liberal allowance of cod liver oil, etc. This forced feeding all too often resulted in wrecking the digestive system by the addition of large quantities of milk and eggs taken between meals.

Rest, the last of the sanatorium trinity was for a long time considered least important of the three, but in recent years it has come to be recognized as the very pillar of successful treatment.

On admission to the sanatorium the patient with active tuberculosis should be put to bed, and kept at rest, until temperature and pulse have been reduced to normal and *maintained* at that, for at least two weeks, and better still for a month. The time necessary to attain this result will depend entirely upon the patient's condition, and how conscientiously he carries out the program of absolute rest, both mental and physical. In rare cases the time necessary for this may be less than a month, but in

others it may require many months. Be the rest period longer or shorter, the time will be well spent, for in no other way can the disease process be so quickly arrested, and the more conscientiously and consistently that rest is maintained at the beginning of his sanatorium life, the sooner and more lasting will be the arrest.

The patient has much to learn of what may seem to us very elementary. Nevertheless he must be *taught* and particularly how to rest, for upon this depends the difference between recovery and failure. Not only must *he remain* in bed but he must learn to relax mentally as well as physically. A patient may remain in bed and yet, because of worry and anxiety, or constantly tossing about, or giving way to every impulse to cough actually secure but little real rest.

With reference to the matter of *cough*. Most patients cough more or less and to them it is a part of their disease. They believe they must cough. Their mental picture of a person suffering with tuberculosis—or consumption as they are likely to think of it—is that of a coughing, hacking individual. To learn that it is not necessary to cough comes as a surprise to them, yet in a large percent of the average sanatorium patients, proper instruction on the part of the physician coupled with a willingness on their part to make an effort to repress the cough, will result in ability to control it, so that when there is material in the throat to be disposed of, it can be done practically without effort. Add to this the assurance to the patient that not only is it unnecessary to cough, but that every cough he does suppress saves his lungs from further destruction, and gives them a better chance to heal, and it is surprising what effect can be obtained in this way without resorting to the use of any drugs for the control of cough. It is true that a certain percentage of cases cannot be trained or that there may be some local source of irritation that makes it impossible to entirely repress the cough, but these constitute but a small per cent of sanatorium cases.

When we consider the method of healing of the diseased lung, that it is accomplished by the deposit of fibrous or scar tissue in and about the infected area, and that this tissue at first is very fragile and easily damaged by unnecessary coughing, boisterous laughing and talking or *any* undue exercise that puts a strain upon heart and lungs, and may in a moment undo the efforts of weeks, we must realize

the necessity and value of rest. Even after all constitutional symptoms have disappeared, return to exercise should be carefully supervised, and kept well below the point of fatigue.

I am not unmindful of the fact that for a considerable proportion of cases, simple bed rest, however conscientiously it may be maintained will not be sufficient to bring about an arrest of the disease. Surgical intervention in the form of pneumothorax, phrenicotomy, thoracoplasty or other means may be necessary but these measures are all for the purpose of bringing about added *rest* for the diseased lung.

If sanatorium care has been instrumental in bringing about an arrest of the disease, what other function or functions has the sanatorium, so far as it relates to the patient?

It must instruct and educate him to so care for himself after leaving the institution that he may maintain his health. It must instruct him in the nature of the disease so that when he goes out, he may by precept and practice, teach others with whom he may come in contact, how to live so as to avoid, if possible, the contraction and development of tuberculosis in them. To be, in fact, a home missionary of health. In this way will the sanatorium perform its most important function to and through the patient.

THE EDUCATIONAL FUNCTION OF THE SANATORIUM TO THE PUBLIC

This is becoming quite rightly, its greatest function. Surely the greatest single factor in the reduction of the tuberculosis death rate in our country has been the educational propaganda of the organized agencies such as this, and its affiliated local and national agencies. Broadcasting the early and suspicious signs of tubercu-

losis has taught the general public enough so that in a good many instances, it actually becomes necessary for the patient to convince his physician that he has tuberculosis, rather than the reverse, which ought to be the situation. Where better than the sanatorium can the general practitioner learn to recognize tuberculosis, and brush up on what he already knows? Any medical man knows how to recognize advanced tuberculosis, but he does need often and again to check up on his ability to recognize early tuberculosis. And if there is co-operation between the sanatorium and the physicians of the surrounding territory, much can be accomplished. It may sound absurd, but it is a fact that there are altogether too many physicians who are afraid to go near a sanatorium. It should not be necessary for the sanatorium to do any educational work along that line. Nevertheless it is, and frequent contacts with local medical associations can do a great deal to establish better relations between the profession and the institution. And the physicians should after all, be the warmest supporters of the institution.

With the support of the medical and nursing profession, together with an interested and intelligent public, a splendid start toward the eradication of tuberculosis has been made and not the least of these agencies has been the sanatorium.

There is much yet to be accomplished, however, and so we ask for, and confidently expect a continuation of this splendid support with the hope that well within the lives of many who are living today, tuberculosis may be brought under control, and cease to demand its annual toll of so many valuable lives.

Let us continue the slogan, "Make the Sanatorium the First Resort, rather than the Last Resort in tuberculosis."

ACUTE LARYNGOTRACHEOBRONCHITIS

Twenty-four cases of acute laryngotracheo-bronchitis of such severity as to require the introduction of a tube to prevent asphyxiation are reported on by Harry L. Baum, Denver. Eighteen of these cases were due to epidemic acute respiratory infections. Two were secondary to measles. Four were subsequent to the presence of foreign bodies in the lung, namely, peanut, popcorn, watermelon seed and bean. Tracheotomy alone was done in thirteen cases; intubation alone in seven, and both in four. In the ten fatal cases: Tracheotomy alone was done in eight; intubation alone in one, and both in one. In the twenty-four cases it was necessary to remove bronchial plugs or aspirate obstructive secretion in ten. Of these, tracheotomy was done in nine and intubation in one. Five patients recovered and five died. Bronchitis alone was diagnosed in eight;

bronchopneumonia in seven; lobar pneumonia in three; influenzal pneumonia in two, and chest examination was negative in four. Of the twenty-four patients, ten died. All fatal cases were of the epidemic respiratory type. The two patients with measles and the four with foreign body recovered. One patient with measles (patient 2) died suddenly two months later from unknown cause. Bronchopneumonia was the cause of death in four; lobar pneumonia in three, and the epidemic type of influenzal pneumonia in two. One died from plug formation in the smaller bronchi. *Streptococcus hemolyticus* was recovered from the bronchial secretions in eight cases; *streptococcus viridans* in two; the influenza bacillus in two; pneumococcus in two; staphylococcus hemolyticus in one, and the organism was undetermined in the others.—Journal A. M. A.

HEALTH EDUCATION AND THE PUBLIC HEALTH OF THE FUTURE

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In his admirable essay of the "Evolution of the Modern Health Campaign," Professor Winslow divides the history of the movement into three periods. First, the period dating from 1840 to 1890, characterized by the application of environmental sanitation especially as effecting water, sewage disposal, quarantine, and the like. Second, the period dating from 1890 to 1910 witnessing the phenomenal advance in the control of the communicable diseases through the application of the newer knowledge of bacteriology. And third, the present period dating from about 1910, characterized by its dominant motive, the education of the individual in the principles and practices of good personal hygiene.

Concerned as we are, at present, with health education and the public health of the future, we are confined as it would appear to the third of these three outlined periods. It will profit us, however, before going further into our specified theme to review the preceding periods, and to see what causative relationship there exists among them.

Within that space of seventy years, from 1840 to 1910, is encompassed the greater part of the achievements of modern medicine and public health. How great these achievements are—few of us are competent to appreciate, save in a remote and impersonal manner. For most of us, gathered here, have been born unto the advantages of modern medicine. The horrors of the plagues that beset and oft made dismal the lives of our ancestors are known to us only by hearsay. What know we of bubonic plague? What of smallpox, typhus, yellow fever, or even of typhoid? Only rarely now is there a sporadic outbreak of one of these diseases, the flaring up as it were of the dying embers of a fire that throughout the history of mankind has consumed more human lives than all the wars of the world.

But see how these plagues cast their sinister shadows over the lives of our forefathers. Read if you will Pepys' description of the 1665 Plague of London, or DeFoe's narrative but faithful portrayal of the ravages of this fearful epidemic, an epidemic that killed one in every four of London's inhabitants, that soured the milk of human kindness and snuffed charity out of the hearts of men, that loosed the bonds of friendship and of filial love, that converted most men into haunted beasts, fearful of all about them, seeking only to escape from an invisible impalpable enemy, that stalked through the country wide.

Or, coming nearer home, read Dr. Ben-

jamin Rush's description of the 1793 yellow fever epidemic in Philadelphia, an epidemic that killed one out of every ten inhabitants, and that through the fear and panic it engendered, made men belie the boast of their fair city—Philadelphia, the City of Brotherly Love.

The literature and the recorded history of mankind contains many a vivid portrayal of the ravages of the plagues that were rampant in the days previous to the development of modern medicine. Reading these, and contrasting the experiences of our forefathers with our own, we can secure some idea of how far we have progressed.

Smallpox, typhoid, cholera, yellow fever, malaria, bubonic plague, typhus,—these were once major causes of disease and death—today, at least in the civilized communities, they are of secondary importance, if not merely clinical curiosities. Add to these the diseases which if not eradicated, have at least been substantially reduced, diseases like tuberculosis, diphtheria, the diarrheal diseases of children and the like, and we begin to approximate the measure of greatness in health achievement witnessed in the period previous to 1910.

But now having contrasted the old with the new, having reviewed the roll of the diseases conquered,—seeing further how life has been prolonged from an expectancy at birth of forty years, in the time of our great grandfathers, to a life expectancy of fifty-nine years for our children, having considered all this, it is but proper that we should ask how did it come about? What were the forces that made for this progress?

Progress of any kind is usually the resultant of many forces, and among these certain are commonly outstanding. The outstanding forces responsible for our great health progress may be given under three divisions—and these are: Individual genius, enlightened government, and advancing economic conditions.

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How can one account for the conquest of smallpox without taking into consideration the contribution of individual genius? Smallpox was a disease as old as mankind itself and for centuries continued its ravages unabated and unchecked. Then, but a while ago, an English country-town practitioner, somewhat bored by the duties of his every day practice, literally stumbled across an observation which brought to the surface the genius within him and gave us the first great immunological instrument and the weapon with which to conquer smallpox. How great an achievement this was, may be judged by the enthusiasm with which the world received vaccinia, the all powerful weapon against the dread disease smallpox.

No less a role did individual genius play in the conquest of yellow fever. Less widespread, but more destructive than smallpox, yellow fever slaughtered thousands upon thousands of victims. I have already mentioned the great Philadelphia epidemic of 1793, in which one out of every ten inhabitants died. Between 1702 and 1800 yellow fever raised its destructive hydra-head in the United States no less than thirty-five times. And from 1800 to 1873 yellow fever appeared somewhere in the United States every single year. You know how the Panama Canal construction attempted by the French was rendered fruitless by yellow fever. And you know how this same disease hampered the work of the United States engineers, until Reed and Gorgas solved the riddle of yellow fever. Here again it was individual genius, involving now not one but several individuals, that won for mankind victory over one of its great enemies. It was Reed and his commission that capped the brilliant work of men who had come before him, finally solved the puzzle of yellow fever.

Numerous were the contributions which individual genius made to our great health progress, but individual genius alone would hardly have sufficed to bring us as far on the path of public health progress, had not enlightened government applied for the welfare of the community the scientific facts discovered by the genius of individuals. One pointed, though negative illustration of this, is the story of Semelweis, the great Hungarian physician, who even before our poet scientist, Holmes, discovered the infectious character of the child bed fever. It was Semelweis who observed that child bed fever, usually terminating in the death of the delivered

mother, was most common where the physician was "most unwashed." He urged common cleanliness and sanitation on the part of the physician attending the woman in labor, but in spite of the fact that his observations were correct and that his advice was fundamentally sound, he was too much ahead of his time and neither the government nor his colleagues were enlightened enough to benefit by his observations. Poor Semelweis was jeered at for his trouble, until the bitter injustice he suffered upset his mind. After Jenners' great discovery was demonstrated beyond all shadow of doubt; practically every civilized country in the world made vaccination compulsory. The results were phenomenal: Smallpox was robbed of its terror. Individual genius and enlightened government combined to make living safer. Now there remains for consideration the third great force, that of advancing economic conditions.

In discussing this item, I am usually tempted to draw my illustrations from certain phases of the history of New York city. We have, as some of you may know, a section in Brooklyn known as Flat Bush. Now Flat Bush is not Indian for Beautiful View—Flat Bush simply means what it says and justly describes the section to which the name is applied, a section flat, marshy and overgrown with swamp bushes. Before New York city became greater New York, Flat Bush was the olympia of mosquitos and the breeding place of the transmitters of malaria. Dr. Smith, the founder of the American Public Health Association, once told me how when he was health officer of the city of New York he had tried to persuade the city fathers to have mercy on the city citizens and to allow him sufficient funds for the eradication of the public health nuisance existing in Flat Bush. The city fathers were deaf to his plea and the citizens of New York continued to take their dose of quinine with the same regularity as their weekly baths. Then New York began to sprout and grow. Manhattan became crowded, the population began to overflow into Brooklyn, realtors, then known as real estate agents, discovered that Flat Bush could be exploited as a home colony site and like good business men they made two bungalows to flourish where formerly grew one mosquito. The marshes thus being filled, the mosquitos were dispossessed, malaria disappeared, our malaria wards were turned over to other specialities, and the public health was improved.

The realtors were not public health minded, but advancing economic conditions induced their contribution to the betterment of public health.

New York city can now boast of an excellent water supply and a fairly good sewage system. Coming to New York you may drink water with a sense of safety, having no fear of typhoid. But this wasn't always so. In the days of the backyard outhouse and the backyard well, typhoid was common in the city. Its elimination was promoted by the later day developed sewer system and our great water systems. But, these were brought into being more in response to the economic needs of our community than because of the demands of public health. Whatever the motives may have been the ever advancing economic conditions have made their substantial contribution to the furthering of public health. And thus we see, how the operation of the three main forces, individual genius, enlightened government and advancing economic conditions, have brought us to that stage of high public health development prevailing today.

And now, what of tomorrow, and what of the day after. Are we to continue making the same progress as we have made in the past and will this progress be due to the operation of the older forces, or must we develop new ones?

In the realm of economic science, there is a law known as the law of diminishing returns. This law maintains that all economic investments, even though paying well at first, must in time decline in the profits returned. This law seems to operate as well in the realm of public health endeavor as in that of economics. For we see how in many a field our investments in effort, with the passing of time brings ever smaller and smaller returns. Consider for example our tuberculosis movement and note how our rate of progress has declined of late, and almost in inverse ratio to the efforts we've invested in the movement.

The law of diminishing returns certainly seems to effect the operation of the three forces we have enumerated before. Great as has been the progress made in the past, we may not hope for as much in the future, unless new forces be brought into operation. And this must be readily evident, not all of the outstanding diseases are amenable to control by the genius of individuals, by enlightened government, or by advancing economic conditions. There is available a vaccine that will immunize us against smallpox, but because of this,

may we also hope for a vaccine that will immunize against bad mental hygiene. There are laws operating to compel the pasteurization of milk but may we ever hope to spread among the people the good sense needed to drink milk, by placing laws upon our statute books?

Even where individual genius and enlightened government have made their contributions, because there is oft lacking a something else certain diseases remain unconquered. Allow me to illustrate my meaning by a consideration of diphtheria. You know that we have both a positive cure and a positive safeguard against this disease, and yet, every year in my community, and I believe, in yours, too, there are scores and scores of children needless victims of diphtheria. Why? Individual genius has done its part in discovering the cure—antitoxin and the preventative—toxin-antitoxin. Enlightened government has contributed its share toward the war against diphtheria. And yet, the final battle has not as yet been won. Why? The answer is generic.

The great public health progress of the past has been made without the active co-operation, oftentimes without the sympathy, without the understanding, and even against the opposition of the average man and woman in the community. Our citizens have been the passive recipients of the benefits of public health, in the promotion of which they have had no share and played no role. What had the average man in the street to do with the elimination of typhoid or with the control of malaria. Far too often, the average man's appreciation of public health is confined to the begrudging conformity with laws that are a nuisance to him, and the significance of which he does not understand. But now, if we are to continue making progress in public health, this condition must be changed. Our citizens must be made to join the army of public health, they must serve as soldiers in the war against disease and not be, as so many are, slackers, in ignorant league with death and disease.

But to enlist our citizens in the army of public health they first need health education. It is to health education that we must look to for new momentum in our public health progress. It is health education that will be the driving force of the public health movement of the future. And that this is no vain prophecy may be seen from the following. Consider, if you will certain of the present day health problems.

Consider for example the problem of mental hygiene or the problem of social hygiene or the problem of the so-called degenerative diseases. Is there any hope that these problems may ever be solved, save through the education of the individual? Certain it is that we can hope for no serum, vaccine, pill or powder that will endow a man with good mental habits and safe-guard him against bed mental hygiene. All the laws of all the statute books, since time immemorial, have as yet failed to eliminate or solve the social hygiene problems. And I know that no medicament that has as yet proved effective in keeping the "go-getting" American from wearing himself out prematurely. On the other hand, health education seems to hold out some promise in the solution of these problems.

Consider further this phase in the matter. The public health movement of the past concerned itself primarily with the conquest of disease and the prolongation of life. The modern public health movement has learned to appreciate that life has more than one dimension, that a long life is desirable, but a healthy as well as a long life is preferable. The modern public health movement has set itself the task not only of eliminating disease and of prolonging life, but also of improving the qualities of existence, and here health education plays its prominent role. For much of good health depends upon the intelligent utilization of our body resources—an intelligence which each individual must possess and which he can acquire only through health education.

In the past public health has done things for the individual, now, to frame it tersely, the individual must be taught to do things for himself. He must be health educated.

And now there is but one more point that I would like to consider and that is the part the practicing physician is to play in the promotion of health education. It is a regrettable but historically correct fact that the public health movement in the United States and for that matter of fact throughout the world, came into being, developed and flourished without the aid and often despite the opposition of organized medicine.

At first blush this is a shocking realization and yet one easily explained. The profession of medicine is an individualist profession and its practitioners by heritage, training and tradition look with suspicion if not hostility on all mass movements. Time there was when this attitude was justifiable, but as relates to the public health movement that time is long past. Organized medicine and the private practitioner now has it incumbent upon him to join the public health movement and to do his proper share of the work. This he must do—or he will be left behind.

And to my mind there is no phase of the public health movement where the physician can function as well as in promoting health education. He has the necessary technical knowledge and exceptional opportunities. All he needs is a little training in pedagogy, and the willingness to pitch in.

A prophet is not without honor save in his own home town—I'm not in my home town—so it's safe to play prophet. And it is safe to prophecy that in the public health movement of tomorrow—health education will be the dominant force. Wise then is the public health leader of today who sees the sign of the time and prepares for tomorrow's service.

DISEASES AFFECTING DISTAL HALF OF COLON

Among the roentgenologically demonstrable diseases that affect especially the distal portion of the colon, from the splenic flexure to the rectum, the three most common, Alexander B. Moore, Rochester, Minn., says, are diverticulitis, cancer and ulcerative colitis. Of much less frequent occurrence are benign tumors, cicatricial strictures, tuberculosis and Hirschsprung's disease. In addition to these the roentgen ray is often called on to reveal the ramifications of fistulas and for the study of postoperative conditions, notably after resection, ileosigmoidostomy. Moore discusses these conditions and how the roentgen ray is useful in their detection. He says that on reviewing the list of diseases to which the colon is subject, it is apparent that most of them, when advanced, give rise to pronounced and diagnostic signs. Early lesions are

less emphatic in their manifestations, less easily discovered and more difficult to distinguish from each other than equivalent lesions of the stomach, and the reasons are obvious. The stomach is comparatively small, can be inspected from every angle, has definite motor activities which are altered by disease, and even minute deformities of the gastric contour are usually significant of disease. On the other hand, the colon is many feet in length, is hard to study from different angles, seldom evinces any definite motor phenomena during the period of examination, and any small irregularities of contour which it may exhibit are likely to be meaningless. Yet certain of these handicaps can be offset, and the diagnosis of colonic disease made more efficient, by active co-operation of the roentgenologist, proctologist and clinician.—Journal A. M. A.

SPINAL ANESTHESIA

J. EDWIN WATSON, M. D.

DETROIT, MICHIGAN

Many of the profession have failed to realize the great value and true scope and the relative safety of spinal anesthesia. Many have hesitated feeling injection of a fluid such as novocain is not without its toxic effects which, when once administered, are beyond control of the operator. F. C. Mann¹ states that prolonged ether anesthesia is conducive to shock, lower blood pressure and subnormal temperature. A prolonged etherization causes pulmonary congestion, a protective increase of mucus along the respiratory tract to the irritation of the anesthesia, small petechial hemorrhages can be noted along the bronchial tree following a general anesthesia. All these conditions provide a fertile field for pneumonia or pulmonic infections. Pulmonic emboli may follow any type of anesthesia but the fertile field that is made by an inhalation anesthesia makes the lung more susceptible to the ravages of pulmonic emboli.

An inhalation anesthesia has an irritant affect on the kidneys and may develop transient albuminuria or granular casts.

The heart is always quickened arising to 90 or 100, and during an active second stage damage may be done to a susceptible heart at this time as well as bodily damage by the rough handling which is often necessary to control the patient during this stage.

Blood cell destruction has been noted in general anesthesia, as an increase in blood platelets, also the haemoglobin decreases and the number of corpuscles increases. Coagulation time is increased during general anesthesia.

It is conceded that all anesthetics have an element of danger and with the statistics I will mention that spinal is one of the safest. Infiltration or block local is of course the safest; the more simple method of spinal should have a greater field than local, because of the general lack of skill on the part of the surgeon in applying local anesthesia.

The statistics for general anesthesia according to Stewart in order of safety are:

Nitrous oxide, 1 death in 300,000 cases; Ether, 1 death in 15,000 cases; Ethyl chloride, 1 death in 12,000 cases; Chloroform, 1 death in 3,000 cases.

Gwathey²—Nitrous oxide, no death in 8,258 cases; Ether, 1 death in 5,623 cases; Nitrous oxide ether, 1 death in 6,905 cases; Chloroform, 1 death in 2,048 cases.

At Eloise Hospital 150 cases have had spinal with no deaths and no complications other than few immediate difficulties that

might arise at any time regardless of the anesthesia used. McMullen³ in a large series of cases had no reaction when injection was made below the second lumbar vertebra with use of the Pitken solution and the Pitken technic. Anesthesia can be safely produced to any point above this level, the diaphragm the limit. Sarnoff Jacob¹², reports 100 cases without one death and 10 per cent failure in anesthesia. Valdone P.⁷ reports 500 cases of spinal anesthesia with tutocain with no ill results. Brindeau⁸ and Lantuejoul performed spinal anesthesia in 296 obstetrical cases and stated complications and fatalities were so rare as to be negligible. DeMio⁹, reported 565 laparotomies under spinal with no serious consequences. Coulten¹⁰ has used spinal anesthesia in 1,500 operations and has not had a single case of death. Boris Rapoport¹¹ reports 500 cases and states that serious complications are rare but cases should be carefully selected.

Campbell¹³ reports two deaths in 100 cases. These cases being poor risks to begin with. Jose Azquierdo¹⁴ gave this type of anesthesia 100 times with no death. Thirteen had subsequent symptoms following which all cleared up. John T. Burns¹⁵ reports 100 cases with no serious results.

From examination of the literature, 3,711 cases of spinal anesthesia with three reported deaths and questionably attributed to spinal anesthesia. I feel that statistics will compare favorably with the statistics in other types of anesthetics.

It can now be admitted that spinal anesthesia from the standpoint of toxicity is safer in its immediate and remote affects. There is a growing tendency at the present time to the use of spinal anesthesia; a common knowledge that spinal anesthesia is safe; is not unpleasant to take and is not without the untoward affects of general anesthesia.

The failure often noticed in spinal anesthesia is not the fault of the anesthesia but to a faulty technic; (a) failure to

* Dr. J. E. Watson graduated in 1921 from the Detroit College of Medicine and Surgery. He is Associate Surgeon to the Detroit Receiving Hospital and to the Eloise Hospital.

properly inject the solution in the subarachnoid space; (b) oversterilization weakens the potency of the novocaine. (c) A too prolonged anesthesia; the novocaine losing its efficacy after an hour is not unusual. The usual danger in the administration of spinal anesthesia is immediate and the surgeon should be ready to meet this emergency; this also applies to general anesthesia and appropriate methods are instituted in either case.

CONTRAINDICATIONS

One of the contra-indications of spinal anesthesia is its effect in lowering the blood pressure and pulse, which renders it necessary that the surgeon should so familiarize himself with the condition of the patient before operating. He should be aware of its limitations and should thoroughly acquaint himself with the patient's general physical condition, so as to rule all things that would be attributed to a faulty spinal anesthesia, such as neurological disorder, enlarged prostate. The contra-indications to spinal are: Emphysema, hypotension, hysteria, neurosis, hemorrhage, sepsis and cerebral arterio-sclerosis, a patient who is in shock or is moribund; advise general anesthesia or institute proper procedures at the onset of the operation to maintain the blood pressure and pulse.

HISTORY OF SPINAL ANESTHESIA

Spinal anesthesia, although only recently widely used, was first introduced in 1885 by Cornery, again in 1899 Bier attempted its use and again it rapidly fell in disfavor because of the dangerousness of the anesthetic used. The administration of the spinal anesthesia should be done by the operating surgeon not to relegate it to assistants or interns, subsequent failure will only prejudice the surgeon against its further use. After the successful injection of the anesthetic observation of the patient from the anesthetic viewpoint is not through, the continued observation of the pulse, respiration and blood pressure should be taken at frequent intervals; the anesthetist must of course watch signs just as he or she would in general anesthesia. This anesthetist should be a person of mature judgment who will guard against disquieting remarks that only disturb the patient. The establishment of faith in the patient's physician is necessary. The slightest disturbing factor may cause the patient anxiety and thus render all efforts ineffective.

Post-operative discomfort is in direct

proportion to the prolonged anesthesia and extensiveness in handling of organs, exposure of tissues and hemorrhages, all these are lessened with spinal because this kind of anesthesia does not permit such manipulation.

If the patient objects to spinal he may be informed that he can go to sleep if he so desires and if during the operation there are reasons for failure, you may substitute a general anesthesia.

If the surgeon is doubtful about his spinal anesthesia or skill narco local anesthesia may be added.

Difficulty may be experienced with certain patients from various social strata, age, sex or general intelligence. It is not usually advisable to discuss the type of anesthesia with the patient before operation but should be left to the discretion of the operating surgeon. Word received by the patient from alarmists or a preliminary argument may antagonize him to the type of anesthetic under consideration.

If pre-operative, the patient has partaken of a meal it is not a serious handicap. Post-operatively it is unusual for the patient to vomit. There is no operative struggle as is noted in the second stage of general anesthesia. Post-operative thirst is reduced to minimum because the patient may soon take fluids and some nourishment.

The patient under this type of anesthesia will not allow shifting traction, rubbing of the peritoneum, undue traction on the viscera or mesentery; the surgeon is not allowed to thrust his arm within the abdominal cavity to do a general exploration because of a questionable diagnosis or because some one long ago advised examination of the entire abdominal cavity.

ANNOYING HEADACHES

The most constant complaint following this type of anesthesia is headache which will usually subside, the proportion running as high as 30 per cent; the persistent headache may be relieved by aspirin, thio-bromine or an intravenous injection of sterile water about 30 to 250 c.c. A few have complained of bladder disturbance, some slight nausea and vomiting, some painful sensation in legs. All symptoms subside in twenty-four hours, occasionally lasting as long as a week.

It is agreed that spinal anesthesia is not anesthesia for all type of cases but is one of choice, second only to local anesthesia in wide usefulness.

In closing let us state there are disad-

vantages to all forms of anesthesia. It is the number of these that will determine whether any given method will prevail. With the comparative statistics I have given you, it seems reasonable that spinal is a relatively safe anesthesia and the dangers may be charged largely to poor technique.

SUMMARY

1. Scepticism should be overcome.
2. General anesthetics have their ill effects.
3. Spinal anesthesia is a relatively safe anesthesia.
4. Failure due to faulty technic.
5. Surgeon should familiarize himself with contra-indications.

6. A trained anesthetist should watch the patient during anesthesia.

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THE TREATMENT OF VASCULAR LESIONS OF THE EXTREMITIES*

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Peripheral arterial lesions have created widespread interest among the surgical profession in the past few years. The outlook for these cases has been so hopeless that with the advent of every new phase of therapy in general, new forms of treatment have been suggested, both medical and surgical, for the relief of these diseases. The vascular system has been attacked directly as well as indirectly through the vasomotor system. The seriousness of impending gangrene in the aged is important primarily from a sentimental point of view. In the individual suffering from thrombo-angiitis obliterans, however, we have to deal with those who, having one major amputation after another, become an economic loss to the community; and it is towards the relief of this group of cases that most of the research has been directed. Vasomotor disturbances, usually called Raynaud's disease, form a very small percentage of vascular lesions. This term, however, is used rather loosely and is frequently seen in hospital records referring to thrombo-angiitis obliterans. Many other terms are used synonymously; such are Buerger's disease, pre-senile gangrene, end-arteritis obliterans. Hebraische krankheit, and spontaneous gangrene. That thrombo-angiitis obliterans should be the term applied to this lesion, there seems little doubt, since Buerger's accurate description of the pathology. It is with this group of cases which we particularly wish to deal, on account of its progressive nature and the unsatisfactory manner in which it has yielded to the many forms of treatment that have been suggested. There are many other terms referring to vascular lesions found in the literature; some of these are erythromelalgia, causalgia, ther-

malgia, trophoneurosis, and acrocyanosis. These may be definite entities, although we believe that most of them should refer to symptomatic stages belonging to one of the two groups in which we wish to place all peripheral vascular disturbances.

Therefore our classification is as follows:

- I. Vasomotor disturbances.
- II. Obliterative arterial diseases.
 - a. Thrombo-angiitis obliterans.
 - b. Arteriosclerotic gangrene.

Differential diagnosis is frequently very difficult and we realize that there would doubtless be some disagreement among authorities as to our classification. We feel, however, that simplicity is important and aside from the differentiation which we have set forth, we do not believe that a further subdivision would be advantageous from the standpoint of treatment. In the vasomotor group we have placed those cases with good peripheral pulses, with intermittent symptoms and with a neurological background. Under thrombo-angiitis obliterans we have placed those cases, regardless of nationality, below the fifth decade in life, with symptoms of long-standing, whose peripheral pulses are

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obliterated, whose arteries are not visible by X-ray, and whose oscillometer readings are low. We do not differentiate arteriosclerotic lesions associated with diabetes from true senile gangrene, as the process is the same regardless of the comparative youth of the diabetic. In arteriosclerotic gangrene we have patients whose symptoms are rapid in onset and of short duration, and their arteries are visible by X-ray. In the early stages of all these lesions the diagnosis is usually obscure. This, added to their comparative rareness, leads to ill-advised operations on corns, calluses, and ingrowing toenails, thus precipitating gangrene in many border-line cases. Practitioners should school themselves in palpating the dorsalis pedis and posterior arteries in patients presenting themselves with painful feet. When these pulses are absent or faintly palpable, operation should not be done until a careful study has been made of the entire situation.

The treatment of vascular lesions of the extremities should be conservative. This is particularly true when the disease effects the young wage-earner, and it is in this class of individual that thromboangiitis obliterans is most common. Many palliative measures have been advocated, such as rest, elevation, and prolonged exposure to superheated air, repeated large hypodermoclyses of Ringer's solution daily, intravenous injections of sodium citrate solution, intravenous sodium iodide, large quantities of Ringer's solution by duodenal tube, and postural exercises. Some of these methods have been found excellent adjuncts to various surgical procedures which we have tried, although our experience would indicate that few cases would respond to these measures alone. Among the surgical procedures, Von Oppel suggested ligation of the femoral vein, Wietung an arteriovenous anastomosis, and Lewis a ligation of the femoral artery. Recently Morton has suggested ligation of the popliteal vein, and Oppel has reported 130 adrenalectomies for the relief of similar disorders. Leriche devised the operation of periarterial sympathectomy for all conditions with inadequate peripheral circulation, and with this operation we have had considerable experience and do not believe that the results obtained warrant the procedure, particularly in cases of thromboangiitis obliterans. A definite hyperemia is obtained by this operation, and if it could be repeated at weekly intervals would undoubtedly materially aid in the

establishment of a collateral circulation; the beneficial effect, however, is of short duration and obviously cannot be repeated at will. Royle's procedure of sympathetic rami-section, devised for spastic paraplegia, produces a prolonged increase in surface temperature in some cases. Adson has reported several cures in thromboangiitis obliterans by this method, and Mixter has two successful cases thus treated. This operation is a major one and cannot be done without mortality. We believe it should be reserved for a carefully selected, small group of cases that fail to respond to less drastic procedures. The ideal management of these cases is not easy to determine. The fact that the disease requires prolonged treatment, necessitating in some cases months of hospital care, must be balanced against the shorter method of treatment by amputation. Economically an individual with a major amputation is, as a rule, materially handicapped; on the other hand, hospital beds in most localities are not sufficient in number or endowed in such a way that semichronic cases can be treated. It has been our hope to establish a method whereby the major part of the time consumed in the conservative management of such cases could be carried on in an ambulatory fashion. This, of course, varies with different individuals. In the treatment of this disease it is our aim to relieve pain until nature has produced an adequate collateral circulation or until there is a spontaneous remission in the disease. We have also hoped to find some means of speeding up the establishment of an adequate circulation to the affected part.

Goodman and Gottesman published their results in four cases of thromboangiitis obliterans treated by non-specific foreign protein. They used typhoid vaccine intramuscularly with apparent good effect, but so far as we are able to determine did not continue its use.

Following the suggestion of Brown, about two years ago, we used small doses of intravenous typhoid vaccine as a non-specific foreign protein to ascertain the amount of vasomotor involvement in various vascular diseases of the extremities. At this time we were still trying to attack the problem through operations on the sympathetic nervous system. During these experiments we found that the relief of pain, the increase in surface temperature, and the improvement in the appearance of the lesion produced by intravenous typhoid vaccine was equal in amount to

the reaction produced by periarterial sympathectomy. It then occurred to us that this reaction might be reproduced indefinitely without harm to the patient and it was found that once a proper dose of vaccine was established for an individual case, that the reaction could be repeated at will with the same dose at intervals of not less than seven days. If the vaccine was given more often than once a week, the same dose of foreign protein would not produce the same reaction. During the past two years we have treated sixteen cases of thrombo-angiitis obliterans, five cases of vasomotor disturbances, and nine cases of arteriosclerotic gangrene by intravenous typhoid vaccine. A summary of the results obtained will be found in Table 1. The results are better than by any method of treatment that we have tried. Twenty-four of the thirty cases entered with complete disability. Seven cases in the group of thirty required major amputations, and are tabulated among the "not improved." Twenty-one of the entire group were improved sufficiently to return to their former occupations.

The technique of the procedure is comparatively simple. It consists in giving the patient a measured dose of mixed typhoid vaccine into the vein in an aseptic manner. We have used vaccine prepared by the Massachusetts State Board of Health. It consists of typhoid bacilli and paratyphoid A and B, in which there are twenty-five hundred million organisms per cubic centimeter. In comparatively young individuals we have used an initial dose of one hundred and twenty-five million organisms or one twentieth of a cubic centimeter. In arteriosclerotics we have used much smaller doses and advocate an initial dose in this class of patients of fifty million bacilli. A tuberculin syringe and fine hypodermic needle should be sterilized by boiling, the desired amount of well-shaken vaccine drawn into the syringe, the median bacillic vein in then punctured in an aseptic manner and blood withdrawn to half-fill the syringe. The contents of the syringe are then injected into the vein. A typical reaction takes place. For the first thirty to sixty minutes the patient sees no change. He then begins to have chilly sensations, which rapidly increase until a real chill develops. This is associated with severe headache and increase in pre-existing pain and elevation of mouth temperature. The height of this reaction usually comes from two to three

hours following the injection, and in many cases is so severe that morphine is necessary. The desired mouth temperature is 103°F. The chill first subsides and then the temperature gradually returns to normal, reaching its former level at the end of five or six hours from its peak. During the early part of the reaction the extremities are colder than normal, and are cyanotic and more painful. Then comes an increase in surface temperature in the affected extremity, associated with relief of pain. This beneficial change lasts for several days after mouth temperature has returned to normal, and it is on this prolonged peripheral hyperemia in the affected part that the efficacy of this treatment is based. If the amount of foreign protein given produces a reaction which is too severe, or too mild, the next dose is decreased or increased accordingly. The discomfort of a reaction which produces a mouth temperature of over 103°F. is more than the average patient is willing to bear. Individuals differ in this respect, some minding the uncomfortable sensations less than others. We have had a considerable number of patients whose symptoms were mild and without gangrene who have preferred to get along with their intermittent claudication or cold extremities rather than to submit to further treatment.

Up to July of this year we had given one or more treatments to over fifty individuals. The sum total of these treatments was over three hundred injections, varying in amount from twenty-five to five hundred million bacilli. This included twelve arteriosclerotic individuals, six of whom had more than one injection. We had not been aware of any harm from the treatment in any case up to that date. Then we had an extremely arteriosclerotic individual, who was also a tabetic, apply for treatment with dry gangrene of the second toe of the right foot. He had had trouble with his legs in the form of intermittent claudication for six years. At one time the left leg bothered him much more than the right. During the past five years he had been through two extensive operations on his stomach for ulcer, and during the past year a successful repair of a fractured patella on the left side. At the time of his last admission, however, there was no ulceration or gangrene on the left lower extremity. He was given seventy-five million organisms into the vein, following which he had a typical reaction. During that part of the reaction when the ex-

tremities are colder and pain is increased, he developed excruciating pain in the left leg. This pain did not subside and the next morning it was obvious that a complete occlusion had taken place in the popliteal artery. A diagnosis of thrombosis was made and under local anesthesia the thrombus was removed from the popliteal artery and the popliteal vein was ligated. The circulation came back into this extremity, relieving the pain, but the thrombus reformed three days later and extended well up into the femoral vessel. A removal of this thrombus did not restore the circulation, and mid-thigh amputation was resorted to twelve days after the initial thrombosis. We were informed, just prior to this, of a similar thrombosis occurring in the affected leg of a diabetic with arteriosclerotic gangrene, who had received her fifth dose of typhoid vaccine in a neighboring hospital. This patient had received two hundred and fifty million baccilli at the time of her thrombosis. Since this time we have had one individual with an arteriosclerotic toe which was partially gangrenous, develop an increase in pain, in the toe following the treatment, which necessitated an earlier amputation of the toe than would have otherwise been done. We have also noticed in one very arteriosclerotic man with intermittent claudication who had had some cerebral lesion three years before, a mild recurrence of his cerebral disorder which cleared up in about four days. In addition to this we have had a few cases of thrombo-angiitis obliterans and arteriosclerosis, who not only have failed to get any relief from pain, but have had no change in the surface temperature, and no benefit in the gangrenous part following the treatment. These cases, however, are the exception rather than the rule and are set down in Table 1. We believe that the best explanation for the thrombosis that may take place is evidenced by Dr. Frank Fremont-Smith's observations on the capillary circulation following the intravenous injection of typhoid vaccine in cases of epidemic encephalitis. He has shown that the blood corpuscles flow through the capillaries at a very much reduced rate during the period of cyanosis and decrease in surface temperature and increase in pre-existing pain which has been observed during the pre-chill stage of the reaction. This slowing of the capillary circulation is probably associated with a slowing of the entire peripheral circulation. Given vessels

with decreased elasticity, with calcified places protruding into the lumen, a thrombosis may occur from any condition which will effect the normal rate of blood flow. This probably best explains the thrombosis which are prone to occur in these individuals during any acute infection. The capillary circulation can be observed to pick up its normal rate of flow with the rise in mouth temperature and at the height of the reaction is seen to be markedly increased over normal. It is during this increase in capillary flow that hyperemia is observed, that the thermocouple registers an increase of approximately 3 degrees of surface temperature for each degree of rise in mouth temperature, and with this stage of the reaction comes the relief of pain and the beneficial changes observed in the lesion itself. As stated above, this increase in surface temperature in many instances will last for several days after the mouth temperature has returned to normal. There seems to be, however, an occasional exception to this rule. Cases with superimposed infection do not respond in the stereotype manner and do not get the same benefit from the treatment. On the whole, individuals suffering with vascular lesions of the extremities, whose affected parts are either normal in temperature or increased, do not receive any benefit from this treatment. Due to the disasters which may occur in arteriosclerotics we feel that this form of treatment should be reserved for cases that do not respond to less drastic measures, and if the treatment is to be undertaken in individuals of this type, a very small dose of vaccine should be used and the patient, or at least his family, should be cognizant of the fact that thrombosis, in some portion of his arterial tree, is possible. In our first disaster reported above in detail, the individual was in such precarious condition that an amputation of his other leg was considered unwise. His pain in the affected extremity was so great that four small doses, varying from thirty-five to fifty million, have been given during the past six weeks with marked relief from pain for periods of two or three days following each injection and there has been no spread of the gangrene, nor has there been any tendency to further thrombosis.

We have attempted to establish the tolerance for this treatment in various individuals while the patient is in the hospital, during which time the obvious

hygienic measures have been adopted; rest, elevation, and postural exercises. As soon as the patient can be made ambulatory, he is sent home and reports back at frequent intervals to the out-patient department. Many cases do well on this regime and can obtain satisfactory results by treatments at properly spaced intervals. Some of them have continued to work while under treatment. It is not always easy to determine the indication for another injection. The interval between treatments must not be more often than once in seven days. Many cases with ulceration will progress favorably with intervals as long as four weeks between treatments. Such factors as lack of progress in the healing of the ulceration, a further drop in the local surface temperature, and a return of pain sufficient to interfere with sleep are used as guides to determine the advisability of the next injection.

TABLE I

	Vasomotor Diseases	Thrombo- Angiitis Obliterans	Arteriosclerosis With and Without Diabetes	Total
No. of Cases Treated.....	5	16	9	30
Average Age.....	31	42	57	—
Average Duration Symptoms (years).....	1.7	4.4	0.5	—
No. with Complete Disability On Admission.....	2	13	9	24
Minor Surgery Necessary.....	0	3	2	5
Major Surgery Necessary.....	0	3	4	7
Average No. of Treatments.....	3	7+	5	—
Average Duration of Treatments (months).....	7	5.3	3.5	—
Marked Improvement.....	4	12	5	21
Not Improved.....		4	4	8
Complete Disability Now, Includ- ing Cases with Major Am- putation.....	0	5	4	9

OLD AGE AND UNEMPLOYMENT

The average duration of life among the ancients, according to L. I. Dublin, was probably not over twenty years. Today, in the United States, the expectation of life is about fifty-eight years. Undoubtedly the medical profession has been a major factor in the production of this triumph. But progress brings new problems, and the world is now faced with the question of what to do with the increasing numbers of persons who have passed the age of 65. In 1890, 3.9 per cent of the total population were aged; at present, 5 per cent fall in this class. At the same time, in 1890, of men 65 years of age or over, 73.8 per cent were gainfully employed, whereas in 1920 the proportion had been reduced to 60.1 per cent. The Secretary of Labor looks with deep concern on the situation and believes that part of the reason for it is the custom of discharging older workers. In former days there may have been reason for releasing the occasional man at the age of 50. Bone and brawn were then more necessary in manual labor than they are now. Furthermore, a man of 50 frequently was old

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and felt so. Now, physical burdens are less, and with an increase in the span of life the productive period is longer. The employer who discharges a worker at 50 or 40, because he is old, "is contradicted by every mental and moral trend of the times," says Mr. Davis. Such a policy is also contradictory to present-day medical opinions of physical fitness, provided bodily condition is periodically checked up by medical examination. Medicine recognizes the danger in industry of varieties of incapacity which are more frequent as age approaches. However, with modern knowledge of the precursors of these conditions it would be possible to select those whose condition might require discharge or retirement. It is not necessary, or wise, to sacrifice persons with valuable experience for the sake of an arbitrary and irrational age rule. Medical opinion, utterance and service are qualified to exert telling influence on this aspect of the national problem of unemployment. To do so would be a benefit to medicine as well as to industry.—*Jour. A. M. A.*

A NEW TECHNIQUE IN THE SURGICAL TREATMENT OF RAYNAUD'S DISEASE

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HISTORY

Symmetrical gangrene was first described as a clinical entity by Raynaud, a French clinician, in 1862. Symptoms of the disease appear in the history of early times. No doubt, Robert Bruce and King Edward III suffered from arterial angiospasm and many cases of leprosy were doubtless late stages of this disease. Some cases of trench foot were probably angiospastic conditions.

SURGICAL TREATMENT

Jaboulay in 1899 described the operation of periparteriorrhaphy which has been accredited to Leriche and was advocated by the latter in 1913 for the relief of Raynaud's disease. Other methods of surgical treatment have been described. Adson and Brown recommend a ramisectomy, ganglionectomy, and perivascular sympathetic neurosectomy. Goltz, as far back as 1874, called attention to the fact that vasodilatation resulted from section of the sciatic nerve. Davis and Kanavel have removed the middle, inferior and stellate ganglia with the cervical sympathetic chain on one side for relief of Raynaud's disease of the upper extremity.

OPERATION

On the case reported below a ganglionectomy was done on the right side on December 3, 1926, following the technique of Kanavel and Davis. The cervical sympathetic ganglia and chain were removed, including the stellate ganglion and connections. Because of the beneficial effects of the operation on the right side it was decided on February 11, 1927, to do a similar operation on the left side. When the operation was begun the manipulation of the carotid sheath with its contents, including the vagus nerve, resulted in stoppage of the heart, since the accelerator fibers to the heart on the opposite side had been severed at the first operation. It was then decided to do a ramisectomy on the left side.

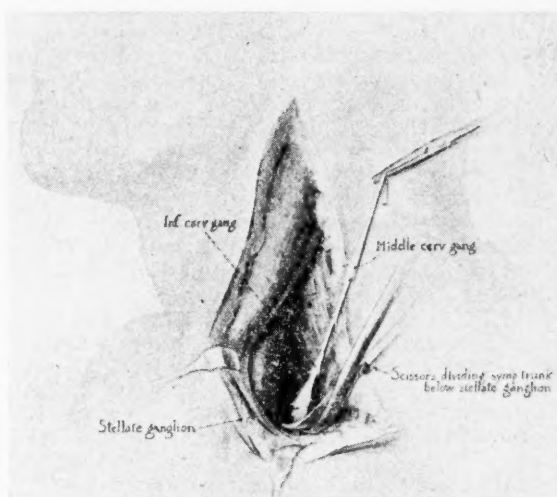
TECHNIQUE

Approach: The technique which we employed in our approach in both operations

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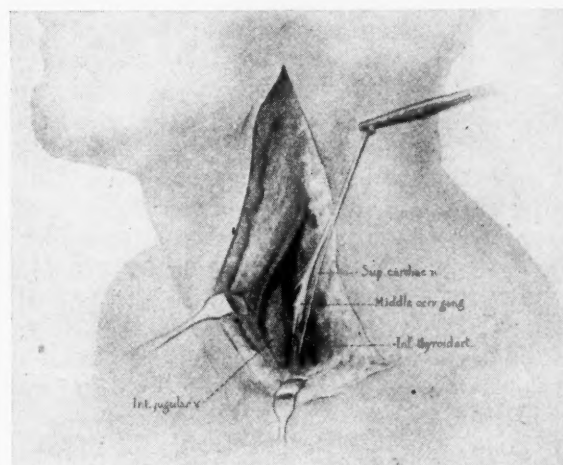
was similar to that of Davis and Kanavel with the exception that we found that a



(Kanavel and Davis)

Figure 1

Shows the cervical sympathetic ganglionic chain and stellate ganglion being removed lateral to the sterno-cleido mastoid muscle. The authors removed these structures medial to the muscle. In a recent stellate ramisectomy Dr. McClintic used the lateral approach as shown above.



(Kanavel and Davis)

Figure 2

Relation of the middle cervical sympathetic ganglion to the inferior thyroid artery.

straight instead of a "hockey stick" incision gave sufficient room for approach, and we retracted the sterno-cleido mastoid muscle laterally and did our operations from the medial side of the muscle.

Ramisectomy: After exposure the cervical sympathetic chain was followed down to the stellate ganglion. The gray rami from the stellate ganglion to the brachial plexus were exposed, lifted on a right angle hook and cut with scissors.

ANATOMY

The text books give the impression that the rami from the stellate ganglion to the

brachial plexus are quite short (see illustration Figure 3 from Toldt) and as exposed at operation only about 1 c.m. of their length is seen. In our dissection on the cadaver they are found to be about 10 c.m. in length. Figure 4, made from an actual dissection, shows them exposed in their entire length after reflecting the scalene anticus muscle (s.a.m. Fig 4). In securing the rami at operation it is very essential to include that one which passes to and through the inferior cervical ganglion.

PHYSIOLOGY

While it has been reported that negative results follow ramisectomy in the upper part of the body, yet our results were identical with those following ganglionectomy and periarteriorrhaphy. The physiological basis for this procedure is well founded. The vaso-constrictor nerves pass from the stellate ganglion to the brachial plexus and by cutting the rami at their exit all vasoconstrictor impulses to the arm are interrupted. The second advantage resulting is that the sympathetic nerves to the head, (eye, face, nose, mouth, etc.,) neck and heart are not interfered with as in excision of the ganglia.

One of us, in visiting Leriche's clinic in the summer of 1927, elicited the information that when he fails with a periarteriorrhaphy in the lower extremity, he then resorts to a ramisectomy.

REPORT OF CASE

C. M., Negro, age 22, railroad worker. Patient was brought to Receiving hospital, Detroit, Michigan, by the police department as a drug addict. He was admitted to the psychopathic ward, where this other condition was discovered and he was then transferred to the medical department.

Chief Complaint: He complained of intense pain of the fingers of both hands and slight pain of the anterior surfaces of both tibia. The patient dates the onset of his present illness from May, 1924, and states that his drug addiction was brought about by the use of morphine for his excruciating pain.

Past History: In May, 1924, while working in a railroad camp, he injured the little finger of his left hand. At the same time the camp was quarantined for smallpox and he, along with the rest of the men, had to be vaccinated. Patient claims that he had a severe generalized infection which was accompanied by swelling of the fingers of both hands and the shins. He was unable to walk, had chills and high fever, and was sent by ambulance to a County hospital in Chicago. At this time he had severe neuralgic pains in all of his fingers and pus was exuding from the little finger of his left hand. This infection extended up the arm and became so severe that an incision was made above the wrist and a rubber tube inserted, which had to remain for six or eight weeks for drainage of thick matter. During all this time he had a tingling and burning in all his fingers, associated with numbness and intense

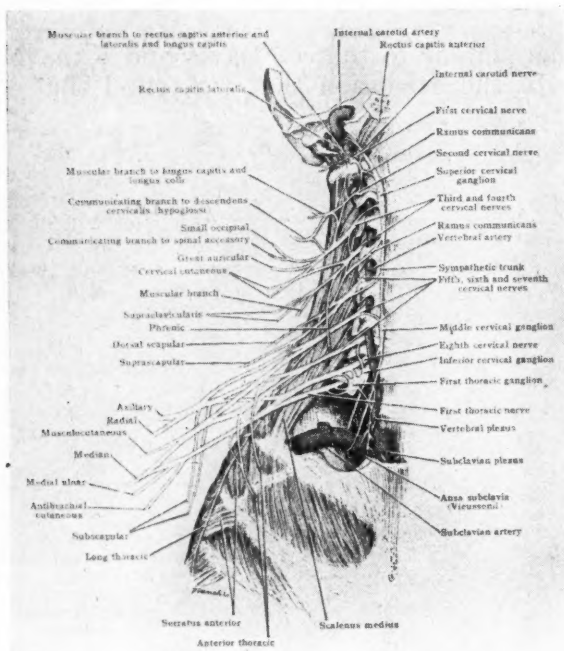


Figure 3
After Toldt, "Atlas of Human Anatomy," Rebman, London and New York.

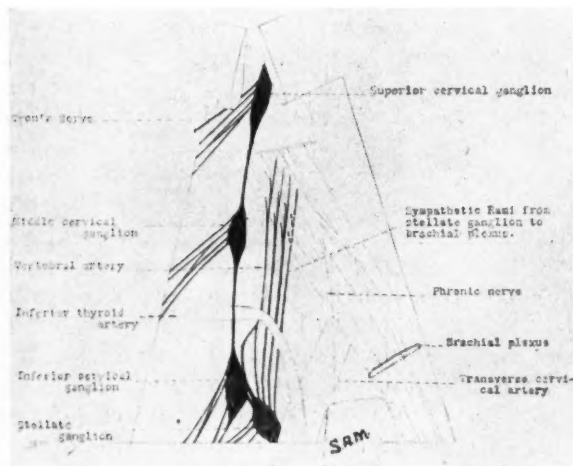


Figure 4
The above drawing is from a dissection showing the length of the rami from the stellate ganglion to the brachial plexus. The scalene anticus muscle (s.a.m.) has been cut and turned downwards to show the full extent of the gray rami.

pain. A short time later his right hand, fingers and arm followed the same course as the left. The tips of his fingers became ulcerated and whitened with pus in back of the nails. The tips of the fingers were incised and a large amount of pus escaped.

He was sent to the best hospitals in the surrounding territory where various diagnoses such as "sclerodactylia," "Raynaud's disease," "scleroderma" and "thrombo-angiitis obliterans" were made. He was given all the morphine he wished and was told that he would "rot away" and that he could never get well.

He came to Detroit the first of May, 1926, and entered the hospital the latter part of the same month, where his fingers were incised to allow drainage. He left, however, before a careful study could be made.

He returned and was admitted to the hospital November 11, 1926. His condition was gradually becoming worse. He had had various amputations of distal phalanges and the entire third left finger. Parts of the tips of the other fingers had sloughed and were very painful, particularly when exposed to the cold. Because of this fact he kept them under the blankets most of the time. He also complained of pain over the anterior surfaces of both tibia at about the junction of the lower and middle thirds. The skin covering the hands, fingers and shins was edematous and glossy. Pulsations of both radial and dorsalis pedis arteries were easily palpated. He lost 10 pounds in weight in the last year.

He had measles and mumps in childhood; pneumonia nine years ago; gonorrhea ten years ago. No history of leucic infection. Alcoholic history negative. Has never had sore throat. Family history is essentially negative.

Routine daily urine analyses were negative. Blood counts and differentials revealed nothing but a slight secondary anemia. Examination of affected parts for leprosy was also negative. Spinal fluid and blood Wassermann were negative. Temperature was of the septic type and was 101° on admission. The pulse was 100 per minute and respirations were 20.

X-ray report: X-rays of the chest, feet and hands revealed the following:

Hands: Marked bony atrophy in all the bones of the hand. There is slight bone necrosis in all the distal phalanges, especially marked in the left and right little fingers and right index finger.

Feet and Legs: Reveal slight degree of atrophy, but no bony absorption as in the hands.

Chest: No areas of infiltration or consolidation. No abnormal findings of the bony cage.

Patient was examined by several neurologists, surgeons and internists, most of whom agreed on a diagnosis of Raynaud's disease.

An operation was performed by Doctors C. F. McClintic and W. J. Seymour on December 3rd, 1926. A right cervical ganglionectomy was performed under gas and ether in the following manner:

A straight incision was made anterior to the right sternocleidomastoid muscle, extending downward from opposite the thyroid cartilage to the clavicle. The skin and platysma muscle were divided. The sternocleidomastoid muscle was freed down to its insertion on the sternum and pulled laterally. The carotid artery, jugular vein and vagus nerve with the sheath were retracted medially. The sympathetic chain was then found posterior to the carotid sheath. The rami of the superior cervical ganglion were cut with the sympathetic trunk and the nerve then freed. The

inferior fibers were cut as they were encountered. The inferior thyroid artery was next uncovered by blunt dissection and the encircling sympathetic fibers cut. The inferior cervical ganglion was freed and the sympathetic chain was dissected down to the stellate ganglia and the ganglia and chain were excised. Bleeders were tied off and the incision was closed with clips.

An uneventful recovery followed. After the operation the patient had a Horner's Syndrome. Of this he had been advised.

Immediate relief from the pain in the right hand and fingers resulted. In a few days he was leaving his right hand on top of the blankets instead of in its usual place beneath them. When asked why, he replied that it was warm and comfortable and that exposing it to cold did not cause him pain. Patient is well pleased and is constantly begging that the same operation be done on the other side.

In order to afford him relief from pain in the left arm, it was decided to operate again. On February 11th, 1927, the rami to the brachial plexus were severed on the left side.

Patient made a complete recovery and in a few days an examination revealed that the patient was free from pain and that the surface temperature of both arms was above normal. The arms felt warm and exposure to cold did not cause pain. Pupil on the left side constricts on being exposed to light. This we should expect, since the nerves to the left eye were not severed. On the right side the sympathetic chain, middle, inferior and stellate ganglia were removed, resulting in Horner's syndrome. On the left side only the gray rami to the brachial plexus were severed so that the sympathetic branches to the head region and heart were not disturbed.

Following the operation there was evidence of vasodilation with increased arterial supply, with relief from subjective and objective manifestations of the disease. The patient was greatly improved and was well pleased with the results obtained in both operations.

(Note: We are indebted to Austin J. Howard, M. D., resident surgeon of Receiving hospital, for the report of the case as given above.)

PATHOLOGY

The underlying symptoms of Raynaud's disease are due to an abnormal sensitivity of the vasoconstrictor nerves, with continuous and intermittent types of spasm of the smaller arteries and arterioles of the extremities. The threshold of stimulation of the vasoconstrictor fibers is low to cold and to psychic influences. The color changes observed in Raynaud's disease are dependent on the arterial constriction. Syncope indicates a complete arterial closure for varying periods of time and little or no blood in the capillaries or small venules. Asphyxia which supervenes after a time is due to the passing of small amounts of blood into the capillaries from the arterioles, and a stasis of the blood. Complete capillary stasis has been observed for from 20 to 30 minutes. The capillaries become more dilated during the longer periods of stasis, the blood becomes blue, and the marked cyanosis of the ex-

tremities complete the clinical picture of the capillary phenomena.

CONCLUSION

We feel that from our experience and the anatomico-physiological basis upon which the operation is predicated that the operation of choice for Raynaud's disease is that of ramisectomy. It rests upon a scientific basis, it is a simple procedure and is free from the objection to a periarteriorrhaphy in that it does not result in any damage to blood vessels.

Our experience proves conclusively that ramisectomy in the upper part of the body gives the same results as are obtained in the lower extremity from a ganglionectomy and ramisectomy.

We feel that periarteriorrhaphy may have a place in surgery, but that it is more limited in its application than ramisectomy, and the latter operation gives the same results and is more inclusive in its application and at the same time it is possible to control or limit the effects more nearly to the areas desired.

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THE EDUCATION OF THE DIABETIC*

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In recent years, there has been a regrettable tendency in the medical profession toward the assumption that with the discovery and utilization of insulin, the problem of the diabetic, if not entirely solved, has at least been greatly minimized. The fact that the incidence and death rate is unquestionably increasing, is either unknown or ignored. (1). The extent of this increase can be shown by the fact that whereas in 1900, diabetic deaths in New York numbered 12.3 per 100,000 population, by 1924 were 21.4; in the same period Philadelphia increased from 9.1 to 17.0 and Baltimore from 9.3 to 23.8. The death rate in Detroit in 1926 was 16.0. in 1927, 17.6 per 100,000.

Much of this increase can be explained on the basis of a greater accuracy of vital statistics, more frequent life insurance examination, routine urine examinations, and to some extent, by the increase in the Jewish population, among whom the disease is markedly prevalent. Unquestionably, however, there has been an actual increase in the incidence of diabetes mellitus, possibly as a result of lack of proper physical exercise with an over-abundant diet, resulting in obesity. The fact remains that there are more diabetic deaths today than in the pre-insulin period. In insulin we have a most potent weapon wherewith to fight

this disease. It would appear that our efforts have not been so successful as we have a right to expect.

Certain objectives are necessary in the management of the diabetic:

1. To restore the patient to as nearly normal as possible and keep him so.
2. Give him a livable diet, as varied as possible.
3. Educate the patient regarding the rules he must follow, in order to obtain the best possible results.

The effort to restore the patient to normal includes the removal of foci of infection and treatment of inter-current diseases so common in these cases, particu-

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larly tuberculosis, hyperthyroidism, syphilis and hypertension. Over 70 per cent of the diabetic patients seen at Receiving hospital show the presence of some such condition.

Having brought the patient to as near the ideal state as possible, the question of keeping him so is linked up with the prevention of arterio-sclerosis and premature old age. Arterio-sclerosis has been shown by pathological examination to be present in 85 per cent of 10-year diabetics, and over 50 per cent of all diabetic deaths at the present time are the result of cardiovascular and renal disease. Their prevention is aided largely by a reduction in weight to normal, just as in the individual who does not have diabetes. Whatever the role of various diets in the production of arterio-sclerosis may be, a certain factor is the presence of obesity or overweight. The difference between the diabetic and non-diabetic is that in the former we have, or should have, complete control of his weight through his diet.

The question of the diet is the one that is most unsettled. The practice in this clinic is to use a diet relatively low in calories, few of our out-patients receiving over 2,000 calories daily. They are weighed weekly, however, and once a normal weight is established, sufficient calories are given to maintain them at that level. An indefinite period of undernutrition is usually a valuable aid in treatment. Our diets are to be classed as relatively high in carbohydrate, the ketogenic ratio being rarely above 1.5 and usually much lower. While this is not the place to argue the advantages of this type of diet, there are many points in its favor.

EDUCATION OF PATIENT

It is in the third objective, the education of the patient, that I believe our greatest failure has occurred, and to this failure can be ascribed the lack of more favorable figures. There is no disease in which so much of the responsibility for the patient's well-being rests with the patient himself, as in diabetes mellitus. Consequently, it is of utmost importance that the patient understand his condition and methods of treatment. One of the largest clinics has given a striking demonstration of what can be accomplished by a policy of detailed instruction. In 1914, 61 per cent of their diabetic deaths were from coma; in 1926, a number of years after the introduction of insulin, 20 per cent died in coma. (2). Last year, of 42 deaths, 91 per

cent from known causes, there was not a death from coma. (3). Johns, in his last 2,000 cases, has had 59 cases of coma with 11 deaths. In the last 45 cases of diabetes treated in Receiving hospital, there were 11 cases of coma, of which 8 died. In justice to the hospital, it should be stated that none of these cases had been previously treated at this institution; however, in the light of the previous figures, the majority of these must be looked upon as avoidable deaths, due to lack of education upon the part of the patient and I fear, at times, of the attending physician.

What, then, is the knowledge that must be imparted to the diabetic?

First, he must understand something of the underlying pathology of his condition; that it is a disease of carbohydrate metabolism resulting from a lack of insulin production by the pancreas; second, he must be taught to test his own urine for sugar and to understand the significance of the result.

His diet must be carefully explained to him, along with the simple facts of dietetics. This is to enable him to vary his diet correctly when necessary, as in traveling. One of the advantages of the comparatively high carbohydrate diet used in this clinic is the ease with which substitutions may be made, as it most closely approximates the normal diet. He must be warned against the complications that may arise. The common story of a severe diabetic coma is that with the development of anorexia and vomiting, insulin was discontinued for fear of a reaction with an increase of acidosis and gradual drifting into unconsciousness. Such events are easily initiated by mild infections, whose dangers should be impressed on the patient. He should be told that whether he eats or not, the body continues to burn calories with the difference that the food is supplied by the body itself and insulin is still necessary in the process. The patient then understands the necessity of uninterrupted insulin therapy. The fact is that if a patient starts vomiting, he needs more insulin with large amounts of fluids by all routes. The importance of a daily intake of at least two quarts of fluid must be stressed. It has been my observation that the average controlled diabetic, in place of the polydipsia he formerly exhibited, has a tendency to drink too little water. Many cases showing an apparently inexplicable ketonuria will have this removed by insuring a larger fluid intake.

The mechanism of an insulin reaction

requires explanation and an excellent method is to allow the patient to have a slight reaction so that he will in future recognize the symptoms. The rapid response to a small amount of carbohydrate can then be demonstrated. He must be cautioned, however, to always first test his urine for sugar. Insulin reactions in the presence of glycosuria are extremely improbable and what has been mistaken for the symptoms of an insulin reaction may be those of an early acidosis.

The patient receiving insulin must be shown the measurement of his dosage, not only in units, but in cubic centimetres, as both types of syringe are in use. The principles of sterilization and danger of infection are points to be stressed. If he is receiving large doses of insulin, it is well to instruct him not to inject in the same place any oftener than can be avoided, as it is believed that under these circumstances absorption becomes delayed or incomplete, probably as result of a slight inflammatory reaction. In this connection it is of interest that insulin is relatively ineffective in oedematous patients.

In addition to diet and insulin, we have in exercise a further method of lowering the blood-sugar and so treating diabetes. The tendency of some diabetics to show a high morning blood-sugar can often be combatted by instructing them to perform some exercise or labor in the early morning.

Cleanliness, particularly of the extremi-

ties, is essential in the diabetic and many cases of gangrene may thus be avoided. Insistence on daily washing of the feet, particularly in diabetics over 45, would appear in our clinic, at least, to be the ambition of an incurable optimist. In private practice, it is also a subject to be approached with considerable tact. Its importance, however, is great.

Finally, the diabetic must be made to understand that his future is far from hopeless; that by following instructions and barring severe infections, his chances of living to old age are as good, or better, than that of presumably normal persons. He has the advantage of being forced to lead a careful and sensible life. Encouragement is necessary in order to build up the patient's morale.

It is by the above means that the diabetic statistics of the future will be improved. Joslin has at present a mortality rate of 3.5 per cent among 1,329 patients (4) the majority past the fourth decade of life. What can be accomplished there can be duplicated generally, if the importance of the neglected details of diabetic instruction and treatment is realized.

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NO COLDS WHEN DIET IS LOW IN SUGAR AND STARCH

The old adage, "Feed a cold but starve a fever," needs amending. The kinds of food you eat are now considered important as well as the amount and may have a definite effect on the number of colds you have this winter. A diet that is low in sugar and starch proved successful in keeping one susceptible subject from having any colds at all as long as the diet was adhered to, according to a report, in the forthcoming issue of *Science*, by Frederick Hoelzel of the University of Chicago. Mr. Hoelzel, who has been an extremely frequent sufferer from colds all his life, discovered in the course of experimental work that he had no colds at all when he fasted. Further experiments with various diets showed that while colds were numerous on vegetarian diets and on diets containing large amounts of sugar and starches, when the diet contained no more than 500 calories of sugars

and starches in a daily total of 2500 calories, ordinary colds did not develop. At the same time the protein intake must be adequate. The explanation of this lies, Mr. Hoelzel believes, in some as yet undetermined relation between the amount of fluid in the body's tissues and their sensitiveness. A considerable amount of water is stored in the body with carbohydrates or starches and sugar. When the carbohydrate intake is lowered, the amount of it and of water stored is lessened, and, according to Mr. Hoelzel's theory, the sensitiveness of the tissues is also lessened, so that a cool breeze or exposure to damp chilly weather will not be so apt to result in a cold. It may be that the freedom from colds in Arctic regions depends more on the Arctic diet, high in meat and low in sugar and starch, than on the cold weather or the absence of germs.—*Science Service*.

VARICOSE VEINS

H. O. McPheeters and Carl O. Rice, believe that the treatment of varicose veins by the injection method should not be attempted by those who are not aware of the complications, as an unduly zealous individual may bring into disrepute through errors in technic a very satisfactory mode of treatment. The mortality rate following the injection treatment of varicose veins is much less than with the operative treatment.

There is not, as yet, one solution alone which can be considered entirely adequate for every purpose. Each solution has quite definite indications. The injection treatment of varicose veins has passed the experimental stage and has been proved to be a very rational form of treatment which should be accepted as supplanting other well recognized methods of therapy.—*Journal A. M. A.*

MICHIGAN'S DEPARTMENT OF HEALTH

GUY L. KIEFER, M. D., Commissioner
LANSING, MICHIGAN

THE EIGHTH ANNUAL PUBLIC HEALTH CONFERENCE

A cordial invitation is extended to all physicians in the state to attend the eighth annual public health conference to be held in Lansing on January 9, 10 and 11, 1929. Headquarters will, as usual, be at the Hotel Olds.

The conferences are sponsored by the Michigan Department of Health and the Michigan Public Health Association, and they mark the annual meeting of the latter organization. Last year there was an attendance of 316 physicians, health officers, public health nurses, sanitary engineers, and interested laymen, representing every section of the state. From the response already received there will be an even larger group this year.

The 1929 conference program lays special emphasis upon two topics of major interest in public health—the latest developments in the control of communicable diseases, and county health department practice. The communicable diseases selected for consideration are diphtheria, scarlet fever and smallpox. Three state health commissioners and the surgeon general of the United States Public Health Service have been invited to speak on this symposium program which will occupy the entire opening session on Wednesday afternoon, January 9, and should prove exceptionally interesting.

The question of the county health department is of unusual importance in Michigan at the present time, and almost an entire session is devoted to this topic. An experienced county health officer will give the main paper, with four discussants.

The health department and industry, the hygiene of maternity and infancy, roadside water supply inspection, immunization against diphtheria, tularemia, mouth hygiene, and the prevention of blindness are some of the other topics to be discussed. All of the speakers are specialists in their line, and many of them are of national reputation.

The program of the sessions will gladly be sent upon request.

UNDULANT FEVER

The American Public Health Association is publishing nine papers on "The Relation of Bovine Contagious Abortion to Undulant Fever in Man", presented at the annual meeting in Chicago in October. The

papers are by national authorities, and discuss the clinical, bacteriological, statistical and experimental aspects of the disease. The symposium will be ready about January 1, it will sell for one dollar or less—depending upon the cost of publication—and it will furnish a most complete and up-to-date resume of the data on undulant fever. Full particulars can be secured from the offices of the American Public Health Association, 370 Seventh avenue, New York city.

INFANTILE PARALYSIS

Michigan Department of Health has a pamphlet on the subject of "Muscle Training in the Treatment of Infantile Paralysis." It is revised from an article which appeared in the Boston Medical and Surgical Journal, and reprinted by permission of that journal. This bulletin is of special interest to physicians, and will be sent to any physician in the state on request.

The department also has a six page article on the "Aftercare of Infantile Paralysis." This will be sent to parents and others interested in the intelligent supervision of poliomyelitis cases after the acute attack.

D.M.G.

MOUTH HYGIENE IN PRACTICE

That the life of the Director of the Bureau of Mouth Hygiene is a strenuous one is proved by the record of his travels. We quote a typical month's report to show the scope of Dr. Davis' varied activities:

"On Monday, October 1, we spoke to the Hancock High school and Rotary Club, in the afternoon to the Houghton High school, and in the evening to the Copper Country Dental Society at a dinner meeting at the Douglass hotel. There was an excellent attendance of as friendly a bunch as can be found anywhere. The next day we went to Ontonagon, where we spoke in the evening to one of the largest parent-teacher groups we have ever addressed.

"On the following morning we spoke to the high school and county normal students and examined the critic room of the County Normal. The county nurse and teachers were very appreciative and anxious to co-operate in every way.

"In the afternoon we took the only bus to Ironwood. The arrangements were for an address before the County Medical So-

ciety, to which the local dentists were invited and which was held at Wakefield on Thursday evening. The physicians of the Gogebic iron country are especially interested and we had a good time with them. There was no school the last two days of this week on account of a teachers' institute, and this prevented any school programs originally intended, but we had some interesting conferences. Monday noon, October 8th, we arrived in Iron River and were met by all three of the local dentists and the school nurse, who had arranged for an examination clinic at the school in the afternoon.

"We found we could leave in time for a conference with the school nurse at Crystal Falls that evening, and left there early next morning for a very busy day in Iron Mountain, which included addresses before the high school, Junior High school, Rotary club, Kingsford High school, examination clinic and an address at P. T. A. meeting in the evening. Dr. O. F. Brauns of Iron Mountain gave the slide lecture, 'The Mouth and Its Message,' before the Upper Peninsula Teachers meeting, and we heard many favorable comments, and he just writes to send it again for another appointment. On Wednesday we had an examination clinic with the school nurse in Vulcan and spoke before the high school, and repeated this same program in the afternoon at Norway, where an especially good group of mothers were present at the examination.

"In the evening we rode with Doctors Sturtz and Williams to the Fifteenth District dental meeting at Powers. This is the largest district in the Upper Peninsula and an excellent number of dentists were present from Iron River, Iron Mountain, Norway, Crystal Falls, Escanaba, Menominee and Hermansville.

"Thursday we spent in Escanaba and spoke before the high school, Junior high school, and had three examination clinics. Friday in Menominee we spoke before the high school and had an examination clinic with 18 mothers present on a very rainy forenoon; had lunch with local dentists at noon; spoke to the County Normal and examined some pupils before them, and addressed the Junior high school, and also the P. T. A. in another section of the city.

"That night we took the night sleeper for Chicago and attended the American Public Health Association and American Child Health Association meetings the following week. Also attended a meeting of the committee on mouth hygiene and

public instruction of the American Dental Association office.

"The next week was spent in catching up at office after an absence of almost six weeks. It included, however, an examination clinic at Zeeland on October 24, and conference with county nurse, dentist and superintendent of schools in Zeeland, and the Sixth District meeting at Owosso on the 25th and a conference with our associate editor, Dr. Rickert, on the 28th. We had been invited by Superintendent Cook of the Harbor Beach schools to spend Wednesday, the 31st, there, and we spoke to the Rotary club at noon and had an examination clinic and conference in the afternoon and also spoke to the physiology class of the high school.

"We stopped off at Mt. Clemens on the way back for a program, November 1, in Macomb county.

"W. R. D."

PROGRESS IN THE COUNTY NORMAL PROGRAM

The lecture series for county normal training classes, begun the first of November, is being enthusiastically received all over the state. Thirty-six counties are already on the itinerary, with requests still coming in. Five staff members give the series of 12 lectures, and the material is especially planned for practical application in the rural schools. The list of counties to be visited follows:

Allegan	Kalkaska
Alpena	Lapeer
Antrim	Lenawee
Arenac	Manistee
Barry	Mason
Bay	Mecosta
Benzie	Menominee
Branch	Missaukee
Calhoun	Montmorency
Charlevoix	Newaygo
Chippewa	Oakland
Eaton	Oceana
Genesee	Osceola
Gladwin	Presque Isle
Grand Traverse	Saginaw
Ingham	Tuscola
Ionia	Wayne
Iosco	Wexford

TRAINING FUTURE MOTHERS

Of all the varied activities of the Bureau of Child Hygiene and Public Health Nursing, the program of Child Care Classes for girls from 10 to 16 years of age is one of the most promising.

The idea of such classes really originated with Dr. Josephine Baker, who started them in the tenement districts of New York. It was there, in the foreign quarters, that the name "Little Mothers"

Leagues" was first adopted, a name that was used in Michigan also until very recently. The change to "Child Care Classes" follows the trend of the psychology of the modern girl. Child care still carries its strong appeal, but not under the more or less sentimental caption of "Little Mothers' Leagues."

Ten lessons make up the course, one given each week for a period of ten weeks. The subject matter is general background of infant and child care—feeding, bathing, physical and mental development, and prevention of disease. Demonstrations are an important part of the instruction given. The classes are always in charge of nurses, and certificates are awarded those girls satisfactorily completing the course.

Since the child care classes were first started in Michigan in 1922, a total of 2,988 groups have been organized with a combined attendance of 197,736 girls. This is a nucleus, at least, of informed mothers for the future. At present there are three nurses on the staff of the Bureau of Child Hygiene and Public Health Nursing devoting their entire time to this work, in addition to the many local public health nurses who are carrying it on, so the nucleus is constantly growing.

DIPHTHERIA IMMUNIZATION IN ST. JOSEPH COUNTY

An intensive program of diphtheria immunization is being carried on in St. Joseph county by the local physicians and health and school authorities, assisted by two lecture-organizers from the Bureau of Education of the Department of Health. From November 12 to November 27, a total of 45 lectures were given and 17 organization conferences were held. Practically every organized group in the county will have been reached when the educational campaign is completed. It is hoped that a large percentage of the school and preschool children will be given toxin-antitoxin. All immunizing will be done by the local doctors.

MONTCALM DEMONSTRATION TO CONTINUE

The demonstration prenatal nursing program carried on for the past three months in Montcalm county is to be continued for an additional three months' period at the request of the local physicians. Harriet Szymczak, R. N., is the department nurse assigned to the demonstration.

The maternal mortality study is prog-

ressing satisfactorily with Dr. Knowlton now in Kalamazoo county. Up to December 1, a total of 1,092 maternal deaths had been studied, and practically every county in the state visited. The Jackson County Auxiliary asked for a talk on the study, and this was given by Dr. Lillian Smith, director of the Bureau of Child Hygiene and Public Health Nursing. Dr. Smith also discussed it before the Blackwell Medical Society of Detroit, at their invitation.

Work on the new water supply and sewage disposal system at Camp Grayling has stopped for the winter. Rapid progress has been made since operations started at the close of the summer camp.

Continued activity is reported in the program of surveys of sewage disposal at state institutions. This is a part of the general program in stream pollution control.

VISITS OF ENGINEERS DURING THE MONTH OF NOVEMBER, 1928

Inspections of railroad water supplies: total, 18.

Bessemer	Plymouth
Birmingham	Rochester
Calumet	Shingleton
Champion	Stambaugh
Channing	Thomaston
Detroit	Wakefield
Escanaba	Watervliet
Iron River (2)	Wells
Keweenaw Bay	

Inspections and conferences, sewerage and sewage disposal: total, 24.

Ann Arbor (2)	Holland (2)
Caledonia	Ionia
Charlotte	Jackson
Chelsea	Lansing
East Grand Rapids	Muskegon Hts. (2)
Grayling	Pontiac
Green Lake	Sparta (2)
Hillsdale	Sturgis (5)

Inspections and conferences, water supplies: total, 12.

Ann Arbor	Pontiac
Bangor	Rockford
Cassopolis	South Haven (Indian Grove)
Ira Township.	Vassar
Marlette	Vermontville
Nashville (2)	

Inspections and conferences, stream pollution: total, 1.

Lansing

Inspections and conferences, institutions: total, 7.

Grayling

Lapeer (6)

Inspections and conferences, swimming pools: total, 5.

Kalamazoo, Y. W. C. A.
Kalamazoo, Y. M. C. A.
Kalamazoo, High School
Kalamazoo, Lincoln Jr. High School
Lansing, Y. W. C. A.

Inspections and conferences, camps: total, 4.

Manistee Boy Scout Camp, Sanitation (2)
Maple City, Kohahna Camp, Sewage treatment
Maple City, Kohahna Camp, Water Supply

Inspections and conferences, miscellaneous: total, 5

Davison, Drainage
Walloon Lake (Hamilton Court) Sewage treatment for resort
Memphis, Nuisance Investigation
Menominee River, Resort Sanitation
Sturgis, Sewage treatment for slaughter house

Survey of school wells in Kent county:

A total of 32 school wells were inspected and sampled

PREVALENCE OF DISEASE

	November Report Cases Reported		November 1927	Av. 5 yrs.
	October 1927	November 1928		
Pneumonia	326	476	361	361
Tuberculosis	735	527	453	398
Typhoid Fever	44	39	62	83
Diphtheria	398	396	496	653
Whooping Cough	850	1,182	389	406
Scarlet Fever	559	977	815	964
Measles	176	133	526	595
Smallpox	55	70	72	137
Meningitis	40	27	12	9
Poliomyelitis	13	8	34	31
Syphilis	1,563	1,171	1,099	1,085
Gonorrhea	1,001	575	725	819
Chancroid	12	8	14	12

CONDENSED MONTHLY REPORT

Michigan Department of Health Laboratories.

Lansing Laboratory—

	+	—	+-	Total
Throat Swabs for Diphtheria	69	351	.....	2474
Diagnosis	271	1219	.....	.....
Release	31	503	.....	.....
Carrier	22	8	.....	.....
Virulence Tests	.....	.....	.....	.....

Throat Swabs for Hemolytic Streptococci	.....	.....	836
Diagnosis	110	192	.....
Carrier	58	476	.....
Throat Swabs for Vincent's Syphilis	43	383	426
Kahn	1196	6538	79
Wassermann	1	1	.....
Darkfield	1	1	.....
Examinations for Gonococci	180	1345	1525
B. Tuberculosis	.....	.....	494
Sputum	83	359	.....
Animal Inoculations	5	37	.....
Typhoid	.....	.....	121
Feces	1	49	.....
Blood Cultures	5	27	.....
Widals	5	32	.....
Urine	.....	2	.....
B. Abortus	3	40	43
Dysentery	1	46	47
Intestinal Parasites	.....	.....	24
Transudates and Exudates	.....	.....	236
Blood Examinations (not classified)	.....	.....	175
Urine Examinations (not classified)	.....	.....	374
Water and Sewage Examinations	.....	.....	523
Milk Examinations	.....	.....	95
Toxicological Examinations	.....	.....	.....
Autogenous Vaccines	.....	.....	1
Supplementary Examinations	.....	.....	150
Unclassified Examinations	.....	.....	594
Total for the Month	.....	.....	15955
Cumulative Total (fiscal year)	.....	.....	74518
Increase over this month last year	.....	.....	3762
Houghton Laboratory—	.....	.....	.....
Examinations made—Total for the month	.....	.....	7552
Cumulative Total (fiscal year)	.....	.....	7552
Increase over this month last year	.....	.....	221
Grand Rapids Laboratory—	.....	.....	.....
Examinations made—Total for the month	.....	.....	7527
Cumulative Total (fiscal year)	.....	.....	31914
Increase over this month last year	.....	.....	1675
Typhoid Vaccine Distributed, c. c.	.....	.....	2255
Diphtheria Antitoxin Distributed, units	.....	.....	3615
Diphtheria Toxin Antitoxin Distributed, c. c.	.....	.....	41360
Silver Nitrate Ampules Distributed	.....	.....	11552
Scarlet Fever Toxin Dick Test Distributed, c. c.	.....	.....	1750
Scarlet Fever Antitoxin Distributed, units	.....	.....	127
Scarlet Fever Toxin Immunization Distributed, c. c.	.....	.....	3126
Smallpox Vaccine Distributed, points	.....	.....	3135

SPECIAL TRAINING IN RADIOLOGY NEEDED

The second of these problems is one difficult to combat, and I know of no means of remedying it except by discouraging the general men on account of the dangers which confront them and the necessary inaccuracy of diagnosis and treatment that must of necessity obtain in the absence of special training in radiology. I have been informed of the death by electrocution in the past few months of two physicians, not trained roentgenologists, in the city of Cleveland, Ohio, from lack of knowledge of the dangers in handling small office machines.

Recently there have appeared folders and advertisements in medical journals, some of which have been issued by what have been considered reliable and well established manufacturers, intended for the general office practitioner and leading to the belief that the possession of an equipment such as this manufacturer puts out is all that is necessary to bring to him great financial returns. One contains this expression: "Doctor, you too may have an X-ray machine in your office." Another manufacturer gives us this: "Every physician and

surgeon has an abundance of use for the X-ray without encroaching upon the field of the X-ray specialist. Invaluable for examining the lungs, heart, gastro-intestinal tract, extremities, for bone pathology, reduction of fractures, and localizing of foreign bodies." What, pray, is left for the poor X-ray specialist to consider his field? Still another in a general medical journal presents a catchy heading thus: "An Unusual Opportunity. An essential part of the equipment of the modern office is an X-ray fluoroscopic unit. As a means of making and confirming diagnoses it is invaluable. It adds enormously to the prestige of the physician and brings him a dominating position in his community." Should we not take some steps to prevent this kind of propaganda? Do not these advertisements show on their faces that their main object is to sell the product of these manufacturers, without due regard for the consequences?—Address of A. L. Gray, M. D., President-elect of the American College of Radiology in November Radiology.

THE JOURNAL

OF THE

Michigan State Medical Society

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JANUARY, 1929

"I hold every man a debtor to his profession, from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves, by way of amends, to be a help and ornament thereunto."

—Francis Bacon.

EDITORIAL

THE BROADER VIEW

How often, when one learns of some impending event or action, does one instinctively make the mental query, "How will this affect me and my affairs?" How often does this personal reaction occur in connection with the sequence of events which goes to make up life? This is probably a survival of the inherited instinct of self-preservation, and really is a protective reflex from which it is difficult to divorce one's self. One hears, not infrequently from the lips of mature members of the medical profession the remarks:

"I am very happy that I am not starting out in practice today. Our profession is hemmed in by so many regulations, licenses, taxes and official obligations that one's every movement must be made cautiously in order that no infraction occurs. The young graduate must contend against these as well as the unfair competition of

free and paid clinics. Industrial, social, lodge, commercial sanitarium, contract and state medicine all combine to narrow the sphere of the private practice of medicine. The inroads on the practice of legitimate medicine made by the various so-called drugless healing cults, mechano, and hydro-therapeutics, as well as by those who profess to heal by prayer and mental suggestion has still further contracted the field formerly available to legitimate practice of medicine. If I had a son contemplating the study of medicine, I should lay before him all of these facts in a very emphatic manner before I would consent to his beginning the study of medicine. While there is no calling more honorable and dignified than ours, one's usefulness as a physician cannot help but be impaired if one is under constant economic pressure."

The statements just quoted give one much food for thought. Unfortunately, the very nature of our profession breeds many individualists and too often the community consciousness is absent. Our profession is recognized as a great altruistic body of men and women working for the good of mankind. Let us not forget this in the mad rush of the life of today!

Instead of asking, "How will this or that affect me as a practitioner of medicine?", let us rather ask, "How will this affect us as a profession, as well as the public, whose health we are striving to maintain?"

For the past thirty years the Michigan State Medical Society, through its officers, council and committees, has been endeavoring to raise the qualifications of those who are practicing medicine. Our society has succeeded in having medical legislation enacted which has placed Michigan in the front rank of the states in this regard.

Our society, representing the profession of Michigan, has encountered much opposition, often of an unfair type, in securing legislative action. In an endeavor to further protect the public health we are seeking this year to secure the passage of a "professional qualifications" act for those who desire to practice one of the so-called healing arts outside of the practice of medicine.

We are also endeavoring to still further strengthen our present medical act to protect the public from incompetent and unscrupulous graduates of medicine as well as quacks, charlatans and imposters.

While conditions vary in numerous counties of our state, the fundamental

problems are the same in all. The physicians practicing in an industrial county may have different problems from those practicing in an agricultural one. The country practitioner has problems differing from those of his brother who practices in a large city.

In order to secure the greatest good for the greatest number we must overlook our personal reactions in many instances and take the broader view. When such vital medical legislation as the passage of laws designed to improve and protect the health of the public are introduced at the coming session of our state legislature, let the profession of the entire state encourage, support and stand back of the representatives of your state society who will be on the firing line this winter.

Louis J. Hirschman, M. D.

RETROSPECT

The new year is a convenient time to review the work of a medical society during the past year. The volume of contributions from our state society is much larger than in any journal published in the past, which we may assume means greater interest and study in the preparation of medical papers. It means a general realization that one's student days have only in reality begun after graduation, when he has definitely entered that greater university, namely, his professional life. Did you ever pause to consider what it cost in time and effort to produce a medical or surgical paper? When so much time and pains are taken in its preparation, how unfortunate, were there not some means of making it available and of preserving it for as many interested readers as possible. This is what this Journal is trying to do.

The quality of the published work is for the most part about all that can be desired. Great care has been shown in the preparation; this is as it should be; far better that a physician produce one paper a year of superior merit, than several which fall short of the writer's best effort. Here may be mentioned several works on the preparation of medical papers dealing with the rhetorical phase of the subject. It is almost needless to say that the editor's heart is made glad when the writer gives special attention to form, sentence structure and other details which make a medical contribution printable. The following will be found of interest to even the experienced medical writer:

"Notes on the Composition of Scientific Papers," by Sir Clifford Albutt; "The Art and Practice of Medical Writing," by Simmons and Fishbein; "The Writing of Medical Papers," by Maud H. Mellish, editor Mayo Clinic publications.

* * *

Marked progress has characterized the efforts of the Joint Committee on Health Education. Use has been made of not only the lecture, but the radio and the press, as well. Millions of readers have been reached by syndicated brief articles in the daily press. These have been found to meet a real demand. Probably at no other time nor in any other state has the movement towards popular education in matters pertaining to health attained such importance as in Michigan today. All credit to the Joint Committee on Health Education.

* * *

Systematic graduate medical education is in the offing. A number of clinics held jointly under auspices of the Department of Post-Graduate Medicine of the University of Michigan and the Michigan State Medical Society have been well attended and a number of the clinical papers have appeared in these pages. The annual meeting of the Society was a great success. The papers presented will be printed in the Journal beginning with this number.

The appointment of a scientific editor has given the secretary and former editor more leisure to devote to county society activities and through his long contact no one is better qualified to study the medical situation as it obtains in the constituent counties of the state. The department devoted to county news, we think, has been not only increased in volume, but in interest as well.

WHITHER INDUSTRIAL MEDICINE, SO-CALLED?

A comparatively recent number of the Journal of the American Medical Association contained a paper which dealt with the subject of providing complete medical service not only for the individual worker, but likewise for his family. The substance of this paper, as abstracted from the article in question, appears in the editorial section of the Journal of the M. S. M. S., so that those who may not have read the article in full, may obtain a pretty clear idea of the particular kind of service advocated by the author. This being one of the papers presented at the Section on Preventive and Industrial Medicine and Pub-

lic Health at the last annual meeting at Minneapolis, the subject was quite thoroughly discussed. The tenor of the discussion by section members was as follows: "There are very few industries," says one, "that take over the full medical care of even their employes, and fewer yet which take the families, unless it be on some sort of insurance basis where the workers themselves furnish the financial support of it." And then he goes on to say, "It would be very interesting to know what obstructions are encountered when one includes the whole medical care of the individual worker and of his family as well. . . . It has always seemed to me that it is not desirable for an industry to take over the medical care of employes' families. I would go even farther and say that, so far as my opinion has yet been formulated, it is not desirable even to take over the full medical care of the employe himself, except on some basis whereby the employe pays at least a part of the cost."

* * *

Another speaker expressed himself: "We are trying to do too much in industrial work. There is only one place where this form of industrial practice is justified, and that is in an isolated mining camp or an isolated lumber camp, where it is impossible to get any other medical care, but in a city where there are other physicians, we have to consider them. Where did the \$789,000 go? Certainly not to the local physician? We must consider the local physician always."

A third speaker commented as follows: "We can go too far in public health work, and in industrial medicine. The medical profession is trained to take care of the sick. It is the duty of public health authorities to prevent sickness among the group, and, when it occurs, to refer the individual to the medical profession. It is not any part of public health activities to treat the sick. The whole object is to prevent illness and to control the spread of disease among the group. That should be an axiom and it should not be violated by public health authorities. Pauperizing of whole communities of American citizens is bad. Every man ought to be stimulated to take care of himself."

The fourth speaker went into the financial phase of the subject. "An intelligent consideration of the scheme is impossible without a knowledge of the terms on which the medical and nursing staffs are employed, the wages paid, the duration of employment, and retirement privileges. It

requires, too, a knowledge of the wages paid to the working persons in the establishment as compared with the wages paid in similar establishments similarly situated in the same community at the same time. It will contribute toward a clearer understanding if we know whether food, fuel and clothing have been bought in bulk by the employer and issued to the employes without cost in order to conserve their health and to enable them to live more happily and do more efficient work; and if not, then why such necessities of life are withheld while medical service is furnished."

* * *

The chairman of the section made very pertinent comment when he raised the question of whether the worker is getting all the wages that he is entitled to under a system of medical care such as Dr. O'Neil, the author of the paper, had outlined. And then he went on to say, "I do not think that there is the slightest danger of pauperization through Dr. O'Neil's services when the average wage is only a little more than \$1,400 among 15,000 employes. The question is, are they getting an adequate wage? Are they not paying too much for medical service, or are they getting a higher grade of medical service that supplements their wages considerably?"

* * *

Yes, the question lies just there. When industry indulges in paternalism to the extent of not only taking care of injuries received by their employes while at work, which is demanded by the workingman's compensation laws (which we approve), but also looking after the medical care of the workingman and his family (which we do not approve) the question is raised, if the act is not looked upon as partial remuneration for wages the workingman should, but does not receive.

It has been estimated that the average income of all persons "gainfully employed" in 1926 was \$2,210 a year. The same year nearly 10,000 paid taxes on incomes of from \$100,000 to \$1,000,000 a year each; two hundred and twenty-eight, on incomes over \$1,000,000 each, and fourteen on incomes of over \$5,000,000, all of which makes us wonder if the mass of the people who help produce these gigantic incomes are really receiving all they are entitled to. When industries indulge in the practice of medicine, is it a matter of unalloyed altruism, or is it a sort of self-imposed fine for a wage that is insufficient to meet the exigencies of life?

INDUSTRY AND NERVOUS DISEASES

According to studies made by Culpin of the London Hospital, nervousness or nervous diseases are a frequent cause of absence in industry. Seven of the first twelve cases on the annual sickness records of one large firm showed losses ranging from 94 to 278 days because of nervous diseases. These latter were listed as nervous breakdown, nervous exhaustion, dyspepsia and nervous debility, heart and nervous overstrain. In this particular firm, the workers were reasonably well paid, working conditions were hygienic and the workers were not driven at their work. In firms where the conditions are less pleasant and the work is strenuous, the absence rate for diseases of this type is lower.

Culpin compares this type of nervousness to that which appeared as shell shock during the war, in as much as its basis is emotional, not physical, although the physical symptoms were very real to the patient. The worker's attitude towards his work was found to play a large part in determining absence due to nervous trouble. Among many workers examined, those who liked their work had very few absences due to their nervousness, even though they showed on examination the same kind and degree of nervous disease as workers with many absences who disliked their work. Some wise person has said that men are tormented by the opinion they have of things rather than by the things themselves. In other words, the comfort one gets out of his work depends largely on his mental attitude towards it, and this in turn depends upon proper adjustment. We are living in an age when men are compelled to regulate their lives to the tempo of machines. We are afraid that this very fact will rob industry of the interest that erstwhile was part of the artistry of craftsmanship.

THE INFERIORITY COMPLEX

There are many overworked terms which have become current phrases in the language. Freud, whatever may be said about the Freudian theory, has coined some convenient expressions, such as the oedipus complex. The inferiority complex, as a verbal expression, was first used by Dr. Alfred Adler, who drew attention to this peculiar mental syndrome and traced its origin. To say that a man has an "inferiority complex" means no more than to say that he feels himself inadequate to meet the problems of life. It is approxi-

imating the truth to say that even ordinary people are afflicted with it, if we may use the term afflicted, for who does not at times feel unequal to the task with which he is confronted? It is quite a normal feeling to feel out-done by others, or to regret that our activities fall short of perfection. If the result is to stimulate to greater effort, we may look upon our reaction as one of divine discontent.

The term "inferiority complex" is mostly used to describe those emotional responses that may prove a real menace or insurmountable obstacle to one's peace of mind. Sometimes the condition takes on a peculiar form. Instead of an attitude of excessive humility, we may have undue conceit in which the subject endeavors to impress those around him with his importance. Behind a screen of arrogance and self-assertion one can often perceive a weak and tremulous soul lamenting its own inadequacy. We have heard of the boy who, going through a graveyard at night, whistled to keep his courage up.

The causes of this peculiar mental condition are many; sometimes fear obsessions; often suppressions during childhood. This may seem the problem of the psychiatrist. In its milder forms, however, it is a matter that should concern all physicians, if not all parents. Most of these conditions in their inception are due to absence of parental wisdom. The scientific study of the human constitution is as yet in its infancy.

Who has not seen the type graphically described by a writer in the London Spectator as follows: "The fear of defeat shows itself in two ways. The first is the development of an aggressive character. The aggressive man is perpetually guarding against encroachment on his personality, or perpetually trying to get his blow in first: he looks on life as a struggle in which he always runs the risk of being worsted, and needs a host of small triumphs to assure him of his worth. In all his human contacts he tries to show himself 'master of the situation.' Such a man is vain and ambitious; his ambitions, however, are not directed towards accomplishment, but towards recognition. He tries to win a favorable place by means of anger. He is capable of spasmodic effort, but slow continuous work without immediate effect soon tires him and makes him feel desperate. In his childhood such a man was obstinate and defiant. He can only draw attention to his existence by being irreconcilable or by adopting the at-

titude of the bully among his fellow-children."

INFLUENZA

The week ending December 1st, 15,000 cases of influenza were reported to the United States Public Health Service by the various state health officers of the United States. This was approximately double the number of the preceding week. Evidently an epidemic of this disease is eminent. Knowledge of influenza is still very much limited in spite of the fact that in 1918 a commission was appointed to study it. Apparently all the resources of modern science, which have been found so effective with other diseases, have failed in influenza. At the time of writing, a great many of the reported cases have been of the ambulant variety of comparatively short duration. So far the death rate in the present epidemic is said to be low. While epidemic influenza may occur at all times of the year, it is unusual for it to start so early in the winter.

While our knowledge of the disease itself is very limited, experience has taught us effective methods of control, namely by avoiding contact with influenza patients and also the avoidance of crowds. Simple nourishing food, plenty of fresh air and sunshine, as well as rest and sleep, put one in the best position to guard against this, as well as other infections.

According to Science Service, most epidemics follow closely along lines of travel. Influenza outbreaks, especially during great epidemics, occur simultaneously in widely separated spots, thus making it impossible to predict exactly where they will strike next. However, cities and towns on the direct line of through transportation by rail, motor, water or air from any of the present epidemic centers may expect an outbreak soon, regardless of the actual distance in miles. It is time distance and not space distance that counts in influenza. The motor tourist and the student returning home for holidays, are sources of danger. If the epidemic follows its present course consistently, Texas, Louisiana and Arkansas may be hit next, when the lines from California and from the south-east meet. The middle west, particularly the railroad centers, is also in danger. Public health regulation in all localities will be needed according to local conditions.

EDITORIAL NOTES

American spelling differs in some respects from the English spelling chiefly in the matter of shortening words by the omission of a superfluous "e" or "u". Occasionally we carry the syncopation process too far. We sometimes obscure the meaning of such words, for instance, as paediatrics, and orthopaedics, by dropping the "a". The American spelling pediatrics would mean the science and art of treating "feet" instead of children. Compare pes, pedis, foot and pais, paidos, Greek for child, the "ai" Greek diphthong becomes "ae" in the English derivatives. Similarly, orthopaedics is the science and art of correcting deformities in children, and not straightening feet, as our Americanized form would indicate.

Whenever, as American citizens, we tend towards a feeling of superiority, something is sure to happen to make us humble. It is hardly the proper thing to assume an exalted attitude with such states as Arkansas and one or two others passing laws which, if carried into effect, would tend to throttle effort towards enlightenment and to return to the spirit of the dark ages. Even Arkansas has its saving remnant, however, in the person of the Dean of the University medical school, who claimed that to leave out the teaching of evolution in the school would wreck it and that, therefore, the faculty would continue regardless of the law. The presence of such foolish attempts at legislation tends to destroy respect for all law.

IRON BY HYPO MEETS DISFAVOR (Northwest Medicine)

Six years ago in an editorial in Northwest Medicine the subcutaneous use of iron was decried, because iron acts more effectively when given by mouth in food and because many pale people to whom it is given are not anemic at all when tested for hemoglobin. In closing we said: "The routine treatment of pale people by hypodermatic injections of iron is a modern instance of 'brass' acting on iron to produce gold—a veritable alchemy." * * * Since the appearance of our first editorial Dr. Christian, at a meeting in Spokane, was asked what he thought of the use of iron subcutaneously. He replied that he had never considered it desirable and ended by saying it was a form of bunk. As recently as last June an editorial in the Journal of the American Medical Association stated that "The administration of iron subcutaneously or intravenously is rarely necessary or desirable. Iron is normally found in the food and minute amounts only are required."

THE DOCTOR AND THE TOP CROP

(Texas State Journal of Medicine)

Some years ago there was a saying in the south that the doctor gets the top crop, meaning that after everybody else has been paid, if there is anything left it goes to the doctor. To those who are not familiar with cotton and cotton raising, let us explain that it generally happens that a certain amount of cotton opens after the principal crop has been gathered. That is the top crop. Sometimes it amounts to a good deal and sometimes not much, and in certain years the early approach of the winter season knocks the top crop out entirely. Having practiced medicine in a section of the state which depended to a large extent on the success of farming interests, we are in a position to appreciate the simile, if we may call it that. Perhaps conditions have changed of late. We hope so. We think it is true that the claim of the doctor for the laborer's hire is receiving more attention now than ever before, and doubtless he is forcing his collections better than he was wont to do in years gone by.

THE WAR ON OPIUM

(The New England Journal of Medicine)

The Geneva Convention having been ratified, more results in the war on opium may be expected, according to Mr. John P. Gavit, in Survey. The convention provides for the setting up of a "Central Board" of eight persons, appointed by the Council of the League, whose function it will be to keep watch of the international traffic in narcotics and to notify the governments when it is illicit. Mr. Gavit, however, is not optimistic as to the character of the board which is likely to be appointed at the start, for the assembly has little enthusiasm for the new organization, and the opposition to the expense may prevent adequate salaries. If, however, the board is such as to command respect, he believes that it will gather to itself in any country a body of informed public opinion which will give it added power.

A GREAT TEACHER, OLIVER WENDELL HOLMES

(New York Medical Journal and Record)

Speaking of the deltoid muscle, Dr. Holmes would say: "Now gentlemen, we are about to consider the anatomy of the deltoid—that powerful muscle which comes down on the shoulder like a constable's fist." He called attention to "beautiful plates of Albinus" and, in describing them, never omitted to mention the lovely figure of a nude woman "with a smile on her face and an ovary in each hand, as if she were saying, like the mother of the Gracchi, 'and these are my jewels!'" He compared the fimbriated ends of the Fallopian tubes to the bedraggled ends of a poor woman's shawl. Holding aloft the female pelvis, he would remark, "Gentlemen, this is the arch under which every youthful candidate for immortality has to pass." Of the tuberosities of the ischium he said, "These, gentlemen, are the projections on which man was designed to sit and survey the works of creation."

When he dropped his eye glasses into an abdominal cavity one day a student laughed. "Well, I wish you had to use glasses," the professor exclaimed, but instantly realizing that this was unkindly, he quickly added, "Of course, I mean that I hope you will live long enough to need them." In demonstrating the pectoralis minor he mentioned that it was less fibrous and more tender than the pectoralis major and added, "And don't forget, gentlemen,—next time you are carving a turkey—to remember this fact and to reserve

the pectoralis minor for your favorite girl."

He compared the sweat gland with its coil to the intestine of a fairy; the mesentery he likened to shirt ruffles of a preceding generation, "which form a short line of attachment expanded into yards of complicated folds."

On the subject of inheritance he aptly remarked that, "Every man is an omnibus in which all of his ancestors are seated."

Dr. Monks gives many quotations from Holme's poems and from his addresses on medical practice. We borrow here some remarks on methods of dealing with patients.

"No matter how hard he stares at your countenance, he should never be able to read his fate in it. It should be cheerful as long there is hope, and serene in its gravity when nothing is left but resignation. The face of a physician, like that of a diplomatist, should be impenetrable. Nature is a benevolent old hypocrite; she cheats the sick and the dying with illusions better than anodynes. If there are cogent reasons why a patient should be undeceived, do it deliberately and advisedly, but do not betray your apprehensions through your telltale features."

"We had a physician in this city whose smile was commonly reckoned as being worth five thousand dollars a year to him, in the days, too, of moderate incomes."

"Your patient has no more right to all the truth you know than he has to all the medicine in your saddlebag, if you carry that kind of cartridge box for the ammunition that always slays disease. He should get only so much as is good for him. I have seen a physician examining a patient's chest stop all at once, as he brought out a particular sound with a tap on the collarbone, in the attitude of a pointer who has just come on the scent or sight of a woodcock."

"What I call a good patient is one who, having found a good physician, sticks to him till he dies. But there are many very very good people who are not what I call good patients. I was once requested to call on a lady suffering from nervous and other symptoms. It came out in a preliminary conversational skirmish, half medical, half social, that I was the twenty-sixth member of the faculty into whose arms, professionally speaking, she had successively thrown herself. Not being a believer in such rapid rotation of scientific crops, I gently deposited the burden, commending it to the care of number twenty-seven, and him, whoever it might be, to the care of Heaven."

PLAN OF MEDICAL SERVICE FOR INDUSTRIAL WORKER AND HIS FAMILY*

The plan offered by Daniel C. O'Neil, Binghamton, N. Y. (Journal A. M. A., November 17, 1928), has been in operation for twelve years and has proved practical. It is an active working plan developed by the Endicott-Johnson Corporation, which employs 15,000 workers in shoe factories and tanneries. The average annual wage of these workers is \$1,441. In 1916, one full-time physician was employed. Today there are twenty-eight full-time physicians, three full-time dentists, one half-time dentist, five dental hygienists, sixty-seven full-time trained nurses, four pharmacists, two bacteriologists two laboratory technicians, two physical therapists, one roentgenologist, six motor ambulances, sixteen clerks and twenty other helpers, as cooks, maids and janitors. In addition to these, when occasion requires, the services of other physicians, specialists, nurses and hospitals are procured. Medical care is offered to all the

* Note Editorial reference to the paper of which this is an abstract.

workers and their dependents. Estimating that each worker has three dependents, the potential number included in this plan is 60,000. No direct charge is made for the service and there is no wage deduction. The entire expense is borne by the company. Increased individual production, and profits as the result of this plan, cover the cost. A medical center furnishes twenty-four hour service, including all drugs and supplies. A maternity hospital is also a part of the plan. Prenatal care is offered, and more than 1,000 women are delivered each year. The mothers remain in the hospital about two weeks and return at frequent intervals with their babies to a well baby clinic. Preventive medicine is offered in correct feeding, formation of health habits and the use of preventive vaccines and serums. The company maintains a rest home in the country for debilitated girls and women and a sanatorium for the treatment of tuberculosis. Every worker seeking employment receives a complete physical examination. If no serious defects are found, he is given six months' trial at suitable work. He is then re-examined and, if satisfactory, is permitted to join a sick relief association which entitles him to a weekly benefit of \$10.50. Membership is not compulsory but about 12,000 workers are members. Last year they received \$132,000, of which they paid \$118,000 in premiums of 20 cents a week. This is the only insurance feature of the plan. Industrial accidents are cared for by staff physicians, as the company is self-insured under the law of the state of New York. One hundred thousand dollars is on deposit with the state to guarantee payment of accident claims. Injuries are kept at a minimum by practical instructions in regard to industrial hazards and by careful supervision of machinery, plants and working conditions. There are no characteristic industrial hazards in this industry. Other activities associated with this plan are retirement pension, widow's pension, and the furnishing of food, fuel, rent, clothing, domestic help and funeral expenses when required. The cost of medical service for these 15,000 workers was \$789,000 or \$52.60 per capita. At the rate of 2.5 cents for each of the 32,000,000 pairs of shoes manufactured by these workers, the cost of their medical service can be covered.

NEWS AND ANNOUNCEMENTS

Thereby Forming Historical Records

Our sympathy goes out to Dr. Geo. L. LeFevre of Muskegon by reason of the death of his wife.

"Some Recent Work on Fractures" was the title of a paper presented by Dr. John R. Davis of Toledo, Ohio, before the Washtenaw County Medical Society at the annual meeting on December 20th. The address was well illustrated by lantern slides.

J. Van Becelaere, M. D., LL.B. at one time resident of Detroit and member of the Michigan State Medical Society, has been living for several years in San Diego, California. He is associate editor of the Western Medical Times.

"The Bugg News" is published by the staff of the Oakland County Sanitarium. It is edited by

Miss A. M. Hall. It is brim full of happy philosophy as many physicians who know the editor would naturally expect. Everything in the little paper is worth reading.

The Upper Peninsula Medical Society will hold its annual convention in Ironwood in August, 1929, it was announced at the regular monthly meeting of the Gogebic County Medical Society held November 9. Dr. R. I. C. Prout of Wakefield read a paper on "Acidosis and Alkalosis." Dr. A. J. O'Brien made a report on the Boston meeting of the American College of Surgeons. Dr. H. F. Ringo and Dr. D. C. Pierpont reported on the Atlanta meeting of the Interstate Post-graduate Medical Association of North America. A resolution was passed expressing sympathy for Dr. and Mrs. W. C. Reineking concerning injuries sustained in an automobile accident which occurred on their way to the tuberculosis convention at Lansing. Dr. Reineking is the secretary of the society. The annual meeting will be held in December. Officers will be elected and a banquet will be held.

Dr. Frank McKenzie and Dr. Harry Kirshbaum of Detroit, read papers before the Clare County Medical Society, Port Huron on December 6, 1928.

DEATHS

Dr. C. M. Williams of Alpena, Michigan died very suddenly on December 11th, 1928, apparently of heart disease. He had several attacks recently but was not incapacitated from work. Dr. Williams was born on a farm near Flint in 1874. After a course in the Flint High School he went to Albion College for two years and then to the University of Michigan where he graduated in medicine in 1901. He located in Alpena in the same year where he had practiced until his untimely death. Dr. Williams served in both the Spanish-American war and the World War. He was twice decorated for bravery during the World War. The citation reads, "Capt. C. M. Williams, Medical Corps, Infantry. For exceptional heroism in action on the Ourcq river July 31, and August 1, 1918; northwest of Coulonges, France, August 2, 1918, and on the heights overlooking the Vesle river August 3, to 7, 1918. During these three periods of severe fighting Capt. Williams maintained a dressing station close to the advance lines and worked continuously night and day under heavy artillery and machine gun fire." Later he was promoted to the rank of major and decorated with the French croix de guerre for bravery in action.

Dr. Williams was a true citizen of his own town, being identified in a constructive way with its many interests. He was an active member of the Methodist-Episcopal church, Hopper Lodge, No. 386, F. & A. M., Alpena Chapter Eastern Star, Alpena Commandery No. 34, Knights Templar, Alpen Exchange Club, William F. Weine Post No. 64, American Legion, Arthur Henry Post of Spanish-American War Veterans and the Alpena County Medical Society. Dr. Williams was an active and valued member of the Michigan State Medical Society. He is survived by his widow, a son John Williams, a student at Ferris Institute, Big Rapids; a daughter, Jane Williams; one sister, Mrs. W. H. Lighthall of Royal Oak and three brothers, W. E. Williams of Alpena, J. I. Williams of Flint and C. B. Williams of Calexico, California.

HARVEY AND HIS WORK

By the EDITOR

(Continued from the December Number)

William Harvey was born in Folkstone, England, April 1, 1578. Very little is known of his early life. His preliminary education was obtained at his native town, where he made his first acquaintance with Latin. He proceeded to the King's School, Cambridge, where he remained five years, and afterward, at 16 years of age, entered Caius College, Cambridge, in 1593. Harvey even early in his school life possessed habits of minute observation. His fondness for dissections and his love for comparative anatomy had shown his mental bias from his earliest years. To Caius, the founder of the college at Cambridge, is accredited the introduction into England of the study of practical anatomy. He obtained for his college a charter which allowed the authorities of the institution to take annually the bodies of two criminals condemned to death and executed at Cambridge, free of all charges, for the purposes of dissection, with the view to increase the knowledge of medicine and to benefit the health of her majesty's lieges, without interference on the part of any of her officers. To what extent the college availed itself of the privilege is not known. In all probability Harvey pursued the course of study which consisted of a sound knowledge of Greek and Latin ordinarily followed until he obtained his B. A. degree in 1597. A year after graduation, at the age of twenty, we find him traveling on the continent where he studied the scientific branches tributary to medicine, as well as medicine itself. As has been said, the universities of northern Italy were the first to welcome the new learning as it emanated from the east in the minds of Greek scholars, as well as rescued manuscripts. The universities of northern Italy, namely, Bologna, Padua, Pisa and Pavia, were at the time at the height of their renown as centers of mathematics, law and medicine. Harvey studied more particularly at Padua, renowned for its anatomical school, and rendered famous by the work of such men as Vesalius, the first of modern anatomists, and his successor, Fabricius.

It is interesting to recall that each entry in the university (Padua) register was accompanied by a note describing some physical peculiarity of the student, as a means of his identification. Thus Johannes Cookaeus, Anglus cum cicatrice in articulo medii digiti die dicta. John Cook, an Englishman, with a scar over the joint of his middle finger, (Matriolated) on the same day, and so on. Harvey evidently did not enter Padua University as a regular matriculant, as no such record occurs on the university register regarding him.

FABRICIUS AND HARVEY FRIENDS

The fame of some of its medical teachers undoubtedly attracted Harvey to Padua. While there he was instructed in anatomy and physiology by Fabricius, one of the most learned scholars of Italy. The fame as anatomist and surgeon of Fabricius ab Aquapendente (from the name of his birthplace) had spread well over Europe. During Harvey's sojourn in Padua he and Fabricius became fast friends. At that particular time Fabricius was engaged in perfecting his knowledge of the valves of the veins. His idea was that these valves prevented over-distension of the vessels when the blood passed from the large to the smaller veins, while they were not required in the

arteries because the blood was always in a state of ebb and flow. Harvey, however, pointed out their true importance as anatomical proof of the circulation of the blood. It was not so much what Harvey learned from Fabricius, as the stimulus of his friendship that proved of such great assistance to him, for we can see even in the instance quoted his view of the purpose of the valves of the veins was entirely incorrect.

In 1602, Harvey was graduated M. D. from Padua. His diploma conferred upon him the degree of Doctor of Physic, with leave to practice and teach arts and medicine in every land and seat of learning. It further stated, that "he had conducted himself so wonderfully well in the examination and had shown such skill, memory and learning that he had far surpassed even the greatest hopes which his examiners had formed of him. They decided, therefore that he was skillful, expert and most efficiently qualified both in arts and medicine, and to this they put their hands unanimously, willingly and with complete agreement and unhesitatingly." The University of Cambridge conferred the degree of M. D. on him the same year.

Harvey married in 1604, the daughter of Dr. Browne, who was physician to Queen Elizabeth and to James I.

ANATOMICAL TEACHING PREVIOUS TO 1745

During Harvey's day and until 1745, the teaching of anatomy in England was vested in a few corporate bodies. Private teaching was discouraged by fine and imprisonment. The College of Physicians and Barber Surgeons had a monopoly in London. The value of anatomy as a foundation to medicine was fully recognized at the time. The subjects for dissection were the bodies of executed criminals. Those were the times of public executions, witnessed by immense crowds whose opposition and sympathy for the felon and his friends often interfered with the procuring of the body for dissection.

The method of anatomical instruction is of interest. The subject was taught practically by a series of demonstrations on the body. The absence of means of preservation of cadavers precluded instruction in detail. A single body was dissected to show the muscles; another to demonstrate the bones, and a third to exhibit the viscera. Attendance on anatomical lectures and demonstrations was compulsory; violation meant the forfeiture of a fine. Some were exempted from the penalty, as one entry shows that a Robert Mudsley "has licence to be absent from all lectures without payment of any fine, because he has given over the art of surgery, and doth occupy only a silk shop and shave."

The anatomical demonstrations were open to the public. The following note appears in Pepy's Diary: "Up and to my office. . . . Commissioner Pett and I walked to Chyrurgeon's Hall (we being all invited thither, and promised to dine there), where we were led into the theater; and by and by comes the reader, Dr. Tearne, with the master and company in a very handsome manner; and all being settled, he began his lecture, this being the second upon the ureters and kidneys, which was very fine; and his discourse being ended, we walked into the hall, and there being a great store of company, we had a fine dinner and good learned company, many doctors of physique, and we used with extraordinary great respect. . . . After dinner Dr. Scarborough took some of his friends, and I went along with them to see the body alone, which we did, which was a lusty fellow, a seaman that was hanged for a

NOTE: The remainder of this paper is an abridgement, with some changes, of the chapter on Harvey in the Author's Pathfinders of Physiology.

robbery. I did touch the dead body with my bare hand; it felt cold, but methought it was a very unpleasant sight.... Thence we went into a private room where I perceive they prepare the bodies, and there were the kidneys and ureters, etc., upon which he read today, and the doctor, upon my desire and the company's did show very clearly the manner of the disease of the stone and the cutting and all other questions that I could think of." Pepy's interest in the operation of cutting for stone is said to be due to the fact that he had undergone the ordeal himself. The Dr. Scarborough mentioned in Pepy's note was a friend and pupil of Harvey.

PERSONAL CHARACTERISTICS

Harvey is described as a man of the "lowest stature, round faced, with a complexion like the wainscot; his eyes small, round very black and full of spirit, his hair black as a raven and curling; rapid in his utterance, chivalric even to gesture, and used when in discourse with anyone to play unconsciously with the small dagger he wore by his side." His individuality was marked, as was evidenced by the strong impression he made upon those with whom he came in contact. His intellectual power and independence of character were unusual. His interests were wider than his scientific studies. According to an anonymous biographer* of the eighteenth century, "He was well read in ancient and modern history; and when he was wearied with too close attention to the study of nature, he would relax his mind by discoursing to his friends on political subjects and the state of public affairs. He took great pleasure in reading from the ancient poets, and especially Virgil, with whose work he was exceedingly delighted. He was laboriously studious, regular and virtuous in his life and had a strong sense of religion. In his familiar conversation there was a mixture of gravity and cheerfulness; he expressed himself with great perspicuity, and with much grace and dignity; and was eminent for his great candor and moderation. He never endeavored to detract from the merit of other men; but appeared always to think that the virtues of others were to be imitated and not envied."

In spite of his choleric and hasty disposition he had the faculty of making close friendships. His replies to his critics showed great moderation. Harvey's true character is probably best seen in that period of his life which was beset with opposition and reproach, immediately following the publication of his great work on the circulation. To his traducers his attitude resembled that of the divine Master. "To return evil speaking with evil speaking I hold to be unworthy of a philosopher and searcher after truth. I believe I shall do better and more advisedly if I meet so many indications of ill-breeding with the light of faithful and conclusive observation."

A MAN OF BROAD VIEWS

Harvey was not a religious man in the narrow sense of the term despite the fact that he lived in an age of warring creeds. His views were broad as befitted a student of the design and workmanship of the Great Architect of the universe. According to Sir Russell Reynolds, "a devout and reverential recognition of God" permeated his work, "not only as the great primal ever-acting force, defined outside and before all the works of nature; but as the Being, 'the Almighty and Eternal God' to whom he says in his last will and testament, 'I do most humbly render my soul

to Him who gave it; and to my blessed Lord and Saviour Jesus Christ.'"

Harvey's knowledge of Latin was so thorough that he could converse with facility equal to his native tongue. He was accustomed to employ both English and Latin even in the same sentence, for example, speaking of the eyes and their function: "Oculi eodem loco, viz, nobilissimi supra et ante ad processus eminentes instar capitis in a lobster snayles cornubus tactu pro visu utuntur unde oculi as a centinell to the army locis editis anterioribus."

HARVEY AS LECTURER

Harvey, excelled as lecturer. His lectures showed an intimate acquaintance with the anatomical structure of more than sixty kinds of animals, as well as a thorough knowledge of human anatomy, which must have taken years of study to acquire. He was elected fellow of the College of Physicians in 1607. An important position which Harvey held was physician to St. Bartholomew's hospital in 1609. "The charge of the physician of St. Bartholomew's hospital" required the incumbent to devote at least one day a week throughout the year to charity. He was further enjoined, "not for favour, lucre, or gain, to appoint or write anything for the poor but such good and wholesome things as he shall think with his best advice will do the poor good, without any affection or respect to be had to the apothecary. And he shall take no gift or reward of any of the poor of this house for his counsel." This "charge" Harvey is said to have faithfully observed.

His lectures were partly read and partly oral. The cadaver lay on the table with the dissecting instruments close to it. An assistant dissected or demonstrated while the lecturer read his remarks. The anatomical lecturer of the sixteenth century was a person of importance. The greatest consideration was exercised for his comfort. The stewards were instructed, "to see and to provide that there be a mat about the hearth in the hall that the doctor be made not to take cold upon his feet * * * And further, that there be two fine white rods appointed for the doctor to touch the body where it shall please him; and a wax candle to look into the body, and that there be always for the doctor two aprons to be from the shoulder downward and two pair of sleeves for his whole arm... and not to occupy one apron and one pair of sleeves every day, which is unseemly." Harvey laid down the following precepts for his own guidance as lecture precepts which the modern anatomical lecturer might observe with propriety:

- (1) To show as much as may be at a glance, the whole belly for instance, and afterwards to subdivide the parts according to their position and relations.
- (2) To point out what is peculiar to the actual body being dissected.
- (3) To supply only by speech what cannot be shown on your own credit and authority.
- (4) To cut up as much as may be in the sight of the audience.
- (5) To enforce the right opinion by remarks down from far and near and to illustrate more by the structure of animals according to the Socratic rule.
- (6) Not to praise or dispraise other anatomists, for all did well and there was some excuse even for those who are in error.
- (7) Not to dispute with others.
- (8) To state things briefly and plainly.

* British Biographies, Vol. IV., London, 1768.

(9) Not to speak of anything which can be explained without the body or can be read at home.

Here we have a combination of orthodox medical ethics and sound pedagogy. Harvey's particular role as Lumlian lecturer included the position of lecturer upon the viscera. Discussing the thoracic viscera he enunciated the remarkable discovery with which his name is inseparably associated, initialing the notes to indicate that the ideas were peculiarly his own.

constat per fabricam cordis sanguinem.
per pulmones in Aortam perpetuo.
Transferri, as by two clacks of a
water bellows to rayse water.
constat per ligaturam transitum sanguinis
ab arteriis ad venas
unde perpetuum sanguinis motum
in circulo fieri pulsu cordis.

W. H.

"It is plain from the structure of the heart that the blood is passed continuously through the lungs to the aorta as by the two clacks of a water bellows to raise water.

"It is shown by the application of a ligature that the passage of the blood is from the arteries into the veins.

"Whence it follows that the movement of the blood is constantly in a circle and is brought about by the beat of the heart." It was not until twelve years after this important announcement that he proclaimed it to a wider audience.

Harvey's literary style was somewhat figurative. He loved to indulge in metaphors—witness: An cerebrum rex, whether the brain is king.

Nervi majistratus, the nerves his ministers.

Musculi cives populus, the muscles, the citizens or the people.

He also draws a similitude liking the brain to a military commander, the leader of an orchestra, an architect, and he speaks of the muscles and nerves as subordinate officers.

Year by year Harvey delivered the Lumlian lectures to the College of Physicians. His private practice grew so as to be fairly lucrative.

HARVEY'S OPINION OF FRANCIS BACON

In 1618 he was appointed physician to James I. In 1631 he was appointed physician in ordinary to King James' son, Charles I. Not only gained he an entrance to the household of the king but he was employed in the homes of the most distinguished nobles. Among others he attended Sir Francis Bacon, who was always a weak and ailing man with a disposition to be hypochondriac. "In William Harvey and Francis Bacon," says Gorton, "may be observed two men like planets in conjunction; born in the same generation, each illustrious in the annals of history, the one in philosophy, the other in science but in striking contrast to each other. The one was a thinker, the other was an actor; one conceived methods, the other put methods into operation; one was an academic philosopher, the other a man of science and discovery; one immortalized himself by his profundity of thought, the other by his contribution to science. Both were stars in the firmament of great men, but long after one has become dim or gone out, the other will continue to shine with splendor."

Though honored by England's Lord Chancellor as the custodian of his health, Harvey evidently failed to be impressed with Bacon's greatness even as philosopher, for speaking of him, Harvey refers to him as "writing philosophy like a Lord Chancellor."

PUBLICATION OF HIS WORK ON THE CIRCULATION

In 1628, the crowning event of his life took place when he published his well considered and matured account of the circulation of the blood. He had demonstrated his ideas of the circulation for twelve years before publishing them, which event occurred in the fiftieth year of his life. This monumental work of the great physiologist was accomplished while yet in his thirties. Why Harvey should allow so much time to elapse between the event of his epochal discovery and its publication is not clear. Evidently the passion to rush into print was not so great as it is with the investigator of today. It is interesting to note, however, that among the greatest thinkers and investigators Harvey is not unique in this respect. Copernicus is said to have detained his "Treatise of Revolutions" thirty years before permitting its publication; Bacon kept his *Novum Organum* by him for twelve years; Isaac Newton "brooded in silence over the motion of the spheres" for more than twenty years before publishing his *Principia*; between the first draft and the publication of the *Origin of the Species* seventeen years were permitted to intervene. Perhaps it was Harvey's reluctance toward "quitting the peaceful haven," that constrained him for so long a time, for elsewhere he tells us that his practice fell off or, to use his own words, he "fell mighty in practice." Regarding him a contemporary wrote, "though all of his profession would allow him to be an excellent anatomist, I never heard of any who admired his therapeutic way. I knew several practitioners in this town that would not have given three pence for his bills (prescriptions) as a man can hardly tell by his bills what he did aim at."

PERSECUTED BY HIS COLLEAGUES

Harvey is said to have been the first to be persecuted by the medical profession for making discoveries at variance with the drift of public thought and opinion. Whatever may be said of the twentieth century the scientific world can be accused no longer of tardiness in the acceptance of new truth, but it reserves the right to "prove all things and to hold fast to that which is good." While Harvey's practice may have fallen off, his discovery did not by any means consign him to obscurity. He still found favor with King Charles I, whose personal physician he was. His constant attendance at court greatly interfered with his duties at St. Bartholomew's hospital and resulted in the appointment of an assistant, but with no diminution in his stipend. A contemporary of Harvey states as follows: "I have heard him say that after his *Booke of Circulation of the Blood* came out he fell mightily in practice, and 'twas believed by the vulgar that he was crack-brained, and all the physicians were against him, with much ado at last in about twenty or thirty years' time it was received in all the universities of the world, and as Dr. Hobbs says in his book 'De Corpore,' he is the only man perhaps that ever lived to see his own doctrine established in his lifetime."

TREATISE ON THE CIRCULATION

Harvey's greatest work was undoubtedly his *Exercitatio Anatomica de Motu Cordis et Sanguinis in Animalibus*, an anatomical treatise on the movement of the heart and blood in animals, published in Frankfurt, Germany, in 1628. The book was a small quarto volume of 72 pages. It opens with a dedication to "The Most Illustrious and Indomitable Prince, Charles, King of Great Britain, France, and Ireland, Defender of the Faith,"

etc. The dedication proceeds: "The heart of animals is the foundation of their life the sovereign of everything within them, the sun of their microcosm, that upon which all growth depends, from which all power proceeds. The king in like manner, is the foundation of his kingdom, the sun of the world around him, the heart of the republic, the fountain whence all power, all grace doth flow." Whatever may be said regarding Charles I, who was the victim of public execution, he certainly befriended Harvey. Then to the president of the Royal College of Physicians and to other learned physicians the author addresses himself in a dedication which he concludes: * * * "I profess both to learn and to teach anatomy not from books but from dissections; not from the positions of philosophers but from the fabric of nature. * * * I avow myself the partisan of truth alone; and I can indeed say that I have used all my endeavors, bestowed all my pains on an attempt to produce something that should be agreeable to the good, profitable to the learned, and useful to letters." Harvey's method here enunciated is the method of every scientist since his day, whose contribution has possessed real merit—that is, reasoning based upon experiment and observation.

The work on the circulation comprises seventeen short chapters. It is an interesting account, lucid and connected, of the heart's action and the circulation of the blood. Harvey had no means of knowing the connection between the smallest arteries and the smallest veins, for the microscope was not in such a stage of perfection as to permit of much fine work in minute anatomy. It was not until the invention of the compound microscope in 1675 that Leeuwenhoek described blood corpuscles and the capillary circulation. In the first chapter the author reviews some of the fantastic theories regarding the functioning of heart and lungs. The heart was held to be the great heat center of the body. The blood was sucked into it during diastole and expelled from it during systole. The arteries cooled the blood; the lungs fanned and cooled the heart. The term "spirits" meant a great deal to Harvey's predecessors but not to him. "The word blood has nothing of grandiloquence about it, for it signifies a substance which we have before our eyes and can touch; but before such titles as spirit and calidum innatum (inherent heat) we stand agape."

He finds it advantageous to study the movement of the heart in the cold-blooded animals—frogs, snakes and fishes. He ascertained that the heart was a muscular organ, that its systole was the result of muscular contraction. The contraction of the heart was more important than its dilatation. "During its contraction the heart becomes erect, hard and diminished in size, so that the ventricles become smaller and are so made more apt to expel their charge of blood. Indeed, if the ventricle be pierced the blood will be projected forcibly outward at each pulsation when the heart is tense." Harvey showed that the pulsation of the arteries depended upon the contraction of the left ventricle. The contraction of the right ventricle propelled the blood into the pulmonary arteries, the pulsations of which were simultaneous with the other arteries of the body. He demonstrated that the two ventricles contracted simultaneously and that the two auricles contracted at the same time.

MOTION, ACTION AND OFFICE OF THE HEART

In the fifth chapter Harvey deals with the motion and function of the heart. It reads somewhat like a modern work in physiology.

"First of all, the auricle contracts, and in the course of its contraction throws the blood (which it contains in ample quantity as the head of the veins, the storehouse, and cistern of the blood), into the ventricle, which, being filled the heart raises itself straightway, makes all its fibres tense, contracts the ventricles, and performs a beat, by which beat it immediately sends the blood supplied to it by the auricle into the arteries; the right ventricle sending its charge into the lungs by the vessel which is called vena-arteriosa but which, in structure and function, and all things else, is an artery; the left ventricle sending its charge into the aorta, and through this by the arteries to the body at large. These two motions, one of the ventricles, another of the auricles, take place consecutively, but in such a manner that there is a kind of harmony or rhythm preserved between them, the two concurring in such wise that but one motion is apparent, especially in the warmer blooded animals, in which the movements in question are rapid."

CAPILLARY CIRCULATION

Since Harvey's time Malpighi, in 1661, hinted at the capillary circulation, which was still further investigated by Leuwenhoek in 1674, who studied it with his microscope in the web of a frog's foot and in other transparent membranes. In 1676, Blankaart, and in 1697 Cowper studied the arrangement of the capillaries by means of injected specimens. A long interval elapsed between the histological study of the circulation before chemistry was sufficiently advanced to afford definite knowledge in regard to oxidation of the blood and the explanation of the true function of the lungs. The work of Priestly in 1775 was a notable contribution to the physiology of respiration. The nineteenth century, through the work of Ludwig in Germany, Chauveau in France, and Foster in England, has seen the physics of the heart and circulation reduced almost to an exact science.

Any account of the works of Harvey would be incomplete were no mention made of his work in embryology. Harvey discussed the nature of development. He may be considered as having made the first independent advance in the subject. That he did not accomplish more was due to lack of instruments of precision, and to the fact that he had to build on the general level of the science of the time. His work on embryology was published in 1651. It was entitled "Exercitationes de Generatione Animalium." In it is an account of not only the development of the chick, but of deer and other mammals as well.

All honor to him who blazes the trail. The refinements, whatever they may be, can never merit for the investigator the honor which is due the pioneer. As was said by Haller, one of the best informed minds of the eighteenth century, "It is not to Caesalpinus, because of some words of doubtful meaning, but to Harvey, the able writer, the laborious contriver of so many experiments, the staid propounder of all the arguments available in his day, that the immortal glory of having discovered the circulation of the blood is to be assigned."

THE HARVEIAN LECTURE

One of his last acts was to set aside a certain sum derived from his estate for the delivery of an oration in commemoration of the benefactors of the College of Physicians. This oration, the Harveian Oration, is still delivered each year by some distinguished member of the medical pro-

fession. Even in his declining years his thoughts were turned to the future. The Harveian Lecture is intended to further the progress of science, especially a knowledge of the body in health and disease. "Much of the nobility of the profession," says Osler, Harveian lecturer, 1906, "depends upon the great cloud of witnesses' who pass into the silent land—pass and leave no sign, becoming as though they had never been born. And it was the pathos of this fate not less prophetic because common to all but the few, that wrung from the poet that sadly true comparison of the race of man to the race of the leaves." Harvey was one of the "few" to have achieved that immortality which places him with "The divine men of old time."

He died June 3rd, 1657, in the eightieth year of his age.

(Concluded)

COMMUNICATIONS

THE DOCTOR AND THE ADDICT

Editor Journal of the Michigan State Medical Society:

What should be done with the drug addict? The physician who has not been called upon to treat this sort of case cannot realize what a trouble they are. There should be some provision made in the way of a state hospital to which every one addicted to the use of narcotics should be sent and pay according to their means. Those who are found incurable should be given a certificate so that any doctor consulted might furnish the necessary drug without liability to arrest. Every physician who knows of a drug addict should report to some properly constituted authority. It seems impossible to cure these people at home. They are essentially hospital or institutional cases.

H. A. Bishop, M. D., Millington, Mich.

TREATMENT OF LOBAR PNEUMONIA WITH REFINED SPECIFIC ANTIBACTERIAL SERUM

The material reported on by William H. Park; Jesse G. M. Bullova and M. B. Rosenbloth, New York (Journal A. M. A.), was studied at Harlem Hospital where two years ago a separate pneumonia service was established. A resident physician and a staff of four bacteriologists and two chemists gave their full time to the investigations. This special staff and the large number of pneumonia patients made the conditions for evaluating the serum ideal. All patients with lobar pneumonia received identical treatment except that alternate patients were given serum. The patients who were given serum received doses of polyvalent serum containing approximately 10,000 units of type I and 10,000 units of type II and a much smaller amount of type III. These doses were repeated every eight hours while the temperature was above 102 F. As soon as the type was determined, the polyvalent serum was replaced by the appropriate monovalent serum. Except for the serum, the treatment of all patients was identical. This standard treatment stresses certain features: (1) adequate fluids up to 3,000 cc. daily; (2) no drastic catharsis; (3) restriction of the use of opiates; (4) relief of pleuritic pain by strapping with elastic adhesive plaster; (5)

rapid digitalization for pulse rates over 120, and (6) oxygen by tent or nasal catheter for cyanosis or rapid breathing. Seven hundred and ninety-three cases were treated. The fact that the introduction of a therapeutic dose of type I antibody solution into the vein of a pneumonia patient infected with the type I pneumococcus neutralizes all the soluble specific substance and leaves in the blood an excess of antibody would lead the authors to hope that its use would have a beneficial effect in lobar pneumonia. The lessened mortality of 42 per cent in lobar pneumonia at Harlem Hospital in a large series of cases treated with antibody, as contrasted with those untreated, is so great that, with the support of recent similar results at the Bellevue and New York hospitals, the authors consider that the value of the antibody in the treatment of type I cases of lobar pneumonia is proved. When in a therapeutic test the ratio of difference in case fatality to its standard error is as great as 3.7, it is considered by expert statisticians to be conclusive proof. In lobar pneumonia caused by type II pneumococci, they found that only in early cases would an ordinary therapeutic dose of antibody surely neutralize all the soluble type II specific substance. In late severe cases, especially those showing bacteremia, even repeated doses sometimes failed to do so. In the early cases, even when bacteremia had developed, the results were usually strikingly good. The mortality for the two years was 22 per cent less in the treated than in the untreated cases, and the ratio of difference in case fatality to the standard error was 1.9. While the evidence of the value of type II antibody is not as overwhelming as in the case of type I antibody, it is of very great value, especially if it is given early in the disease. In the type III cases the specific antibody had only a slight effect in neutralizing the specific soluble substance and the therapeutic results were very slight, if any. Probably because of the excessive capsules which type III pneumococci have in or when freshly isolated from the body, the antibody has much less effect on freshly isolated than on virulent stock cultures. There is also another reason in that a fair proportion of supposed type III pneumococci are a subtype which really belong to the miscellaneous (IV) group, just as do the subtypes A and B of type II. These pneumococci are influenced only slightly by specific type III or specific type II antibody, but are influenced strongly by their own specific antibody. More than 50 per cent of the miscellaneous or group IV pneumococci, which form about 40 per cent of the whole, have been split up into ten types which are just as distinct from each other as are type I, II and III.

EFFECT OF MORPHINE ON FUNCTION OF NORMAL AND PATHOLOGIC KIDNEY

The work reported on by Ira R. Sisk and William S. Beyer, Madison, Wis., was undertaken primarily for the purpose of determining the safety of administering morphine sulphate in quantities sufficient to insure comfort to patients who had been subject to operations on organs of the genito-urinary tract, and who had some impairment of the kidney function. The results were sufficiently constant to justify the following conclusions: 1. Morphine sulphate, given in the usual therapeutic dose and repeated every four to six hours until the patient develops toxic symptoms does not impair the function of the normal kidney. 2. Urologic surgical patients may be given morphine sulphate in the usual therapeutic doses without fear of impairment of renal function.—Journal A. M. A.

COUNTY SOCIETY ACTIVITY

Revealing Achievements and Recording Service

EDITOR: Frederick C. Warnshuis, M. D.

Secretary Michigan State Medical Society

MINUTES OF THE DECEMBER EXECUTIVE COMMITTEE MEETING

The Executive Committee convened in Grand Rapids at 6 p. m., December 20, 1928.

Present: B. R. Corbus, J. D. Bruce, J. H. Dempster, R. R. Smith, F. C. Warnshuis.

1. The Secretary reported on the mail vote as to the time and place of our January meeting of the Council. Twelve of the Councilors having voted that the session be held at the headquarters of the American Medical Association in Chicago on January 16 and 17, 1929, the Secretary was directed to so arrange for that meeting.

2. Some thirty of the Secretaries indicated that they would attend an Annual Conference of County Secretaries at the headquarters of the American Medical Association in Chicago on January 16 and 17, 1929, and fifteen of the Secretaries stated that if they were re-elected to office they would be glad to attend. The Secretary was directed to arrange for the Annual Conference of County Secretaries to be held at the headquarters of the American Medical Association in Chicago on January 16 and 17, 1929.

3. It was determined to allow Secretaries attending the Conference their actual traveling expenses and \$4.00 for hotel bill. The Palmer House of Chicago was selected as the headquarters.

4. The Secretary reported upon activity in the work of instituting legal procedures against violators of our Medical Practice law and submitted correspondence thereon that had been entered into with the Attorney General and the state constabulary.

5. The Secretary presented a communication from the Crippled Children Commission, requesting appointment of an advisory member in the commission's activity of drawing up amendments to the present Crippled Children's Act.

6. The Secretary transmitted a report of the Legislative Commission and imparted facts of activity as well as confer-

ence had with the governor, state senators and representatives.

7. Editor J. H. Dempster presented several matters pertaining to the publication of the Journal which were carefully considered and the editor authorized to continue along the line of the recommendations that he made.

8. An appropriation of \$3,500 was made for the purpose of defraying the expenses attendant upon the publication of the medical history of the profession in Michigan.

The meeting adjourned at 10:00 p. m.

F. C. Warnshuis, Secretary.

MID-ANNUAL MEETING OF THE COUNCIL

The Council will hold its mid-annual session on January 16, 1929, at the headquarters building of the American Medical Association, 535 N. Dearborn street, Chicago.

Why Chicago? In order that the Council and County Secretaries, who are to meet at the same time, may have the opportunity of personally visiting our national headquarters and gain inspiration from learning what our parent organization is achieving in behalf of all doctors.

The following program will govern the sessions. The afternoon of the second day will be devoted to a tour of inspection of the work of the several councils and bureaus and departmental activities.

MID-WINTER SESSION OF THE COUNCIL AT AMERICAN MEDICAL ASSOCIATION HEADQUARTERS, 535 NORTH DEARBORN STREET, CHICAGO, ILLINOIS, JANUARY 16, 1929

10:00 A. M.—

1. Call to Order.
2. Executive Committee Minutes.
3. Editor's Report.
4. Secretary's Report.
5. Treasurer's Report.
6. Medico-Legal Report.
7. Communications.
8. New Business.

Luncheon—1:45 P. M.

1. Report of Finance Committee.
2. Report of Publication Committee.
3. Report of County Society Committee.

4. Election—
Editor
Secretary
Treasurer
5. Business.
- 6:30 P. M.—Dinner with County Secretaries.
 - (a) President L. J. Hirschman.
 - (b) Chairman R. C. Stone.
 - (c) Dr. Olin West—General Manager and Secretary.
 - (d) Dr. M. L. Harris — President - Elect, A. M. A.

JANUARY 17, 1929

- 9:00-9:15 A. M.—
 1. Headquarters Building
W. C. Braun, Business Manager.
- 9:15-9:30 A. M.—
 2. Council on Education and Hospitals.
N. P. Colwell.
- 9:30-9:45 A. M.—
 3. Laboratory
P. M. Leach.
- 9:45-10:00 A. M.—
 4. Investigations
A. J. Cramp.
- 10:00-10:15 A. M.—
 5. Records and Biographies.
- 10:15-10:45 A. M.—
 6. The Journal and Association Publications
M. Fishbein.
- 10:45-11:00 A. M.—
 7. Legislation and Legal Medicine
W. C. Woodward.
- 11:00-11:30 A. M.—
 8. Public Health
J. M. Dodson.
- 11:35-11:45 A. M.—
 9. Council on Physio-Therapy
H. J. Holmquest.
- 11:45-12:15 P. M.—
 10. Your Association
Dr. Olin West.

HOSPITALIZATION OF CRIPPLED CHILDREN UNDER THE NEW LAW

The hospitalization of crippled children at state expense at "any hospital within the state other than the hospital at the University of Michigan, if such other hospital maintains a resident or visiting orthopedic surgeon and orthopedic nurses" has caused much discussion during the past year.

The policy of hospitalizing patients at state expense has been in effect in Michigan since 1913. Such hospitalization took place at the University of Michigan hospital. There were two reasons for this; one that hospitalization should be made available for those citizens of Michigan who were not financially able to provide such treatment of their own accord, and the other, that the students in the medical school of the university should have material for study.

In the case of crippled children, it is believed that no hospital in the state is large enough to provide enough beds for all of the children or for as many of them as it is desirable to get under treatment at this time, and also in the future. Further than that, it is believed that orthopedic surgery is not usually emergency work and that surgical treatment is postponed by families until many of the children reach the point of being too old to profit by this care to any appreciable extent. It is also felt that a great many more families will give consent to have treatment for these cases if their children can be cared for at hospitals nearer to their homes. For these reasons the bill makes provisions to cover such cases.

It next became necessary for the commission to determine which hospitals in the state were qualified under the law to receive state pay patients. The commission is made up of lay people and they in no way attempt to pass upon professional questions. This matter of the equipment of hospitals was referred to the group of orthopedic surgeons.

The group of orthopedic surgeons is made up of eleven men who specialize in this type of work. They are:

Dr. W. E. Blodgett, Detroit, President.
 Dr. Carl Badgley, Ann Arbor, Vice-President.
 Dr. D. M. Stiefel, Detroit, Secretary.
 Dr. A. D. LaFerte, Detroit, Acting President during absence of Doctors Blodgett and Badgley.
 Dr. F. C. Kidner, Detroit.
 Dr. John Hodgen, Grand Rapids.
 Dr. R. V. Funston, Detroit.
 Dr. A. G. Goetz, Detroit.
 Dr. F. E. Curtis, Detroit.
 Dr. F. H. Purcell, Detroit.
 Dr. C. W. Peabody, Detroit.

The group of orthopedic surgeons welcomes into its membership other surgeons who are eligible. Correspondence in this regard should be addressed to the secretary, Dr. D. M. Stiefel, 541 David Whitney building, Detroit.

The term "visiting orthopedic surgeon" has been referred to this group for interpretation. The orthopedic surgeons have gone on record as saying that this means "daily attendance". Hospitals which can qualify for recognition will be placed upon the approved list.

The hospitalization of patients financially able to pay for their treatment, does not come under the direction of the commission, but advice is rendered wherever possible. Two registered nurses on the staff of the commission have charge of this phase of the work.

After a diagnostic clinic has been held

these nurses remain in the community and visit the homes of the crippled children. Non-orthopedic cases are referred at once to the local family physician for treatment. The report of the examining orthopedic surgeon is explained to the family having a crippled child and a consultation is held with the family physician. In the case of a crippled child, the family being financially unable to pay for treatment, the advice of the family physician is sought in an endeavor to dispose of the case to the best satisfaction of all concerned. If the case would have to be charity if done locally, while the state would pay if treated at an orthopedic hospital, most family physicians welcome this opportunity of recommending that the case be taken out of town for treatment at the expense of the state. The commission in no wise interferes with the relations between the family and its physician, but desires always to preserve harmony in the community and at the same time render service to the afflicted. The ability of the family to finance its hospitalization is decided by the Judge of Probate in the county in which the patients have resided.

The great duty of the Commission for Crippled Children is the spreading of educational propaganda regarding the possibilities of correction of orthopedic difficulties in the light of modern surgery and science. The problem of the education of cripples brings this subject very much to the attention of the public. Instruction in school subjects can be carried on during periods of convalescence and proper facilities need to be provided so that the mental growth of the physically handicapped child will keep pace with his physical correction. Special convalescent schools would provide this necessity. At present there are three such places where treatment and education go hand in hand. They are University of Michigan hospital school, the Convalescent School of Children's Hospital of Michigan at Farmington, and the Sigma Gamma Convalescent School at Mt. Clemens. More of these combined schools and hospitals are needed in the state.

Esther Martin.

Legislation: In this issue will be found the revised copies of the two proposed bills that are to be introduced in the legislature. They have been sent to the officers and legislative committees of County Societies. They were accompanied with the request that senators and representatives be interviewed and requested to support this legis-

lation. We repeat anew this request and also suggest that individual members interview and write their legislators. One hundred per cent support and activity is imperative.

Holiday Greetings: Your Secretary is very appreciative for the hundreds of Christmas cards and greetings received from members. We regret that by necessity our personal mailing list was small, but we do want to acknowledge in this manner the receipt of these greetings and beg indulgence for this blanket acknowledgment.

Illegal Practitioners: If such there are in your county, the fault is that of your County Society. Let your officers confer with your county prosecutor. If he is indolent or declines to act, advise your State Secretary and you may expect action. Two weeks ago a complaint was filed on Monday. On Tuesday the man was arrested—on Thursday he was tried in circuit court, convicted, fined \$500 and sentenced to six months in Ionia prison—On Friday he was in prison. We cannot assure you of such promptness in every instance, but we can promise definite action. See your local prosecutor first.

THE SERVICE OF A MEDICAL SOCIETY TO THE COMMUNITY*

HARRISON SMITH COLLISI, M. D., F. A. C. S.
GRAND RAPIDS, MICHIGAN

Medical societies were originally organized for the purpose of correlated study and search of scientific truths. In the early days the medical society constituted an open forum wherein the physician might present an original investigation to the medical world. Hippocrates, Galen, Harvey, Lister, Pasteur and others aspired, as we do today, to contribute something for humanity. From their teachings have come the medical principles upon which preventive medicine is founded. With the increasing necessity for rendering public service in the field of preventive medicine, there has developed a close relationship between organized medicine and the health interests of the community, the state and the nation.

The first authentic medical society, consisting of four members, was secretly or-

* President's Address, read before Annual Meeting of Kent County Medical Society at Peninsular Club, Grand Rapids, Michigan, December 12, 1928.

ganized in Italy in 1560 A. D. A hundred years later the Royal Academy of Medicine was formed in Berlin and the Paris Academie de Chirurgie in 1731. Others followed and in 1800 the Royal College of Surgeons was organized in London. In America, the Boston Medical Society began in 1735, and the New Haven County Medical Society was founded in 1783. Later, other county and regional societies were formed, which ultimately led to the organization of the American Medical Association in 1848, adopting as its purpose "the advancement of the science of medicine and raising the standard of medical education." At this time there was not a single licensing or examining board in any state in the Union, a medical college diploma being the only requirement for the right to practice medicine.

There was little, if any, public health activity in these early societies. Physicians at that time did not digress from their routine attendance of the sick to inquire into the needs of community welfare. They knew very little about preventive medicine, which is largely responsible for our interest in public welfare. With the practical application of the principles of preventive medicine to combat such diseases as yellow fever, smallpox, typhoid and malaria, came the necessity for better medical organization and with the demand for this came the county, state and national societies, of which the county society is the basic unit in the same way that the cell is the histologic unit of the body.

The county medical society of today evidences the real democracy of medicine, for here all physicians meet on a common level for the purpose of studying medical problems, presenting cases and discussing questions of public health involving the welfare of the community. Primarily organized for the essential purpose of advancing the interests of science and the education of its individual members in medical subjects, it has now broadened its field of endeavor to educate the public in the applied principles of preventive medicine, to enlighten them on the needs for further protection against medical frauds and quacks, and to co-operate with lay organizations in the betterment of health.

In order to successfully serve the community, a medical society should be well organized with every member actively interested, especially the officers. The president should be a man of high professional standing, having the good will and support

of his associates, respected in the community, capable, persistent, intelligent, untiring in his efforts, and last, but not least, unselfish, giving freely of his time to every question bearing upon the functions of his society. Committees of the society should diligently engage in the study of problems assigned to them and report without unnecessary delay, for much depends upon promptness.

The most important function of county societies in the community is public health education. The earlier this is impressed upon the young individual, the more lasting and valuable is its effect. Periodical health inspections of school children cause the child to become interested in his own health and he will continue to seek medical knowledge with inspired confidence in the medical profession as he grows older. The public health education committee of the medical society will do a real service to appoint a staff of well qualified speakers to give instructive health lectures upon such subjects as "Toxin-antitoxin Immunization," "Prevention of the Common Cold," "Vaccination," "Exercise," "The Treatment of Simple Injuries," and historical talks upon the lives of such men as Jenner, Pasteur, Lister and other well known founders of preventive medicine. It should be explained that the early treatment and correction of congenital and acquired deformities will lessen the disability and lead to independent, useful citizenship.

Industrial employees should be taught the principles of health, hygiene and sanitation and how to protect themselves from minor injuries and subsequent infections that are prone to produce lengthy disability by not having reported for immediate first-aid treatment. Employers can be given suggestions about the proper amount of ventilation and sunlight for their factories. Statistics show that industrial plants having welfare departments under a physician's direction get better co-operation from employees.

Periodical health examinations for the adult have been advocated by the profession for several years. The county medical society can be of the greatest service to the community by sponsoring and conducting a health examination week campaign once each year. Properly advertised, it is bound to succeed. Newspaper publicity, circularization, placarding of factories, preliminary addresses before noon-day luncheon clubs and students as well as screen announcements in moving picture theatres will materially assist in promot-

ing public interest. During health week hospital clinics should be adequately staffed and utilized for conducting examinations of persons unable to pay for service. Private patients of physicians should be given special attention and health examinations encouraged among them. Local radio stations, some of which are now engaged in broadcasting questionable medical advice from unreliable sources primarily for commercial gain, should be enlisted in the cause and induced to lend their services to members of the county medical society in disseminating authentic medical information. Health movies presented during the week at local cinema theatres will produce favorable impression upon public opinion. In New York city motion pictures have been used in the public parks for some time to advance the interests of public health education. Medical society representatives serving in the hospital clinics during the campaign should be thoroughly trained in the proper technique for making physical examinations. Standard examination blanks should be used and tabulated records made of the number, type of case, diagnosis, advice given and ultimate disposition. A central committee of the society should later make a full statistical report through the press to the public.

Periodical health articles are now being published in the health column of "The Press", sponsored by the joint committee on public health education, comprising the Michigan State Medical Society, the University of Michigan, Michigan Department of Health and other allied organizations. Greater confidence is gained by readers when it is known that such authentic information emanates from substantial and reliable sources. Already prominent magazines and periodicals such as Literary Digest, Nation's Business, Children's Magazine and the Atlantic Monthly, as well as Hygeia, are publishing instructive health articles in which the public are informed on matters pertaining to their medical welfare. A recent article discussed the fact that people are now going to the barber, beauty specialist and gymnasium instructor for ultra-violet light treatments. It is the duty of every physician who has public interest at heart to make an attempt not to deprive the public of the benefits of ultra-violet light, but to see that it is used with understanding. Would it not be better for the organized medical profession to keep the public well informed on the fallacies of health fads and their over-

estimated value? Tuberculosis today is on the increase among young women, due largely to the fact that in order to become slender with boy-like figures, they have injudiciously starved and deprived their body tissues of proper nourishment by what they call "dieting." A well known skin specialist, in a scientific article on beauty preparations, stated that he had observed more cases of urticaria, erythema multiforme and dermatitis among women than ever before in his practice. He believed that the reason for this was the indiscriminate use of cosmetics and beauty powders. What is to become of the young woman who now uses the artificial tan powder upon her face?

The public is sufficiently educated today to be taken into the confidence of the physician on medical subjects. They resent an attitude that apparently classes them as children. The cults have been quick to realize this and have taken advantage of it to commercialize.

A medical society can render a great service to the community in influencing proper legislation governing medical practice. There are today in Michigan unscrupulous individuals, who misrepresent medical information and extort exorbitant fees from the public for worthless services. The name "Doctor" is not absolute assurance of standard medical qualifications. Our own Honorable Fred W. Green, Governor of this state, in a recent address before the Michigan State Medical Society, said, "Your profession needs, among other problems, to take definite steps to keep the public well informed of the progress of medicine and instruct the people how to discover the men most competent to practice the healing arts. Every time a citizen strays into the hands of a quack or an incompetent practitioner, he comes away with a lowered opinion of the title 'Doctor'—if he is lucky enough to get away. It would be a great day for Michigan if sometime a layman could open the door to any physician's office and know in this state the standards of admittance are highest and the title of 'Doctor' cannot be usurped by any ambitious fellow, half trained in medicine and improperly grounded in the essentials of medical education."

The cults and irregular practitioners are organized, unhindered by ethics, and are carrying on an extensive advertising campaign. It is imperative for organized medicine to give the public facts that will bring about a suitable reaction against

such practice. Violations of the Medical Practice Act have been reported during the past year in our own city and through the co-operation of the prosecuting attorney's office the circumstances in each instance have been investigated. Only yesterday the sister of a patient acutely ill with influenza reported that an unlicensed physician had been treating the case. Who knows but what this patient has developed pneumonia and may die as a result of improper care? Reaction usually occurs against the individual physician who reports instances of such violations to the officials, but when an organized medical society complains, there should be immediate action without prejudice.

Quacks and medical frauds work an extreme injustice on suffering humanity. Cancer cures and the secret treatment of tuberculosis are dangerously pernicious and should be prevented. The legislation committee of every medical society should do their utmost to stamp out such methods of practice.

Every medical society should have a civic relations committee, whose duty it is to attend meetings of civic committees, taking active part in all matters where health, hygiene and sanitation are involved. Our own Kent County Medical Society's special committee on clinics should be renamed and given instructions to indulge in questions of this nature. Perfect relationship between all health agencies and clinics and the medical society should be established. Much criticism by the profession of certain free clinics has existed in the past and the physician has always been regarded secondarily. The question has always been, "are physicians the architects of the health house, or are they the workers?" Medical men should themselves be in control of clinics and co-operate with lay organizations, thereby securing successful and satisfactory function. Our own President-elect Harris of the American Medical Association, has suggested that medical societies operate all free clinics and thereby render their own services to persons unable to pay. Such an example is seen in the Cass County Medical Society, representing the physicians of Fargo, North Dakota. Since 1923, they have been actively co-operating in a community health program which at the present time is successfully controlled.

Another service can be rendered to the community in constructive opinions on the laws regulating the sale of milk. Certified, pasteurized and grade "A" raw milk are

being advocated. Health departments of each community need the support of organized medicine for education of the public in these things. Even the Metropolitan Life Insurance Company is now publishing paid advertisements giving information on the qualifications of certified milk.

Certain economic problems, such as the financial relation between the patient and physician, may be studied by the civic relations committee. There is at present a committee of which Dr. Ray Lyman Wilbur, President of Leland-Stanford University, is chairman, that has already begun an exhaustive five-year study of the cost of medical care. During the last fifty years the number of hospitals in the United States has increased from 149 to over 7,000. Hospital beds have increased from 35,000 to over 800,000. This is a percentage of increase of 2,000 per cent as compared to 175 per cent increase in population.

Case records of diseases, surgical conditions and injuries received in industry and traffic accidents are in the files of our hospitals. These are not made use of as they should be. Statistics compiled from these and published will give the laity information that will be of use to them in reacting for their welfare. Do they know that the majority of automobile accidents occur among negligent drivers, who perhaps have some mental, nervous or physical defect which impairs their qualifications as a competent driver? Do they know that a large percentage of these same drivers do not carry insurance and that our own welfare funds are being dissipated to pay hospital bills for which they have been responsible? The number of cases of ruptured appendices could be used to compile facts leading to warnings to persons having abdominal pain, advising them never to take a cathartic before consulting a physician on the presumption that they may have acute appendicitis. The library committee of the medical society, with the assistance of hospital librarians, can do much to tabulate statistics of these records. The world war proved the value of such compilation.

These considerations may seem theoretical, yet they are now all in practice. The County of Kings Medical Society in Brooklyn, New York, serves as an example. Its activities have existed for more than one hundred years and valuable service has been rendered to the community. Beginning as a house to house organization and meeting for the first time in the office of

Dr. Adrian Vander Veer in 1822 in Flatbush, it later grew in 1900 to an organization with a permanent home dedicated for \$90,000 and having a membership of over 1,600. One of the greatest medical libraries is housed in this institution containing over 100,000 volumes, and is open to the public. It has indulged in great activities in public health education, legislation and civic relations. It stands high in public opinion.

Our own Kent County Medical Society, during the past three years, has indulged in most all of these same functions and has made a creditable showing. We have sponsored our first health examination week and for three years have conducted a course of school and factory lectures on health subjects. We have practically written the new milk ordinance of Grand Rapids and have studied the free clinic situation and thereby established satisfactory relations with the health agencies. We have laid the foundation for an active campaign against quacks and medical frauds and are interested in a number of other civic enterprises involving public health.

The coming year holds much in store for the library committee. If they will study and collect statistics on traffic accident cases in our hospitals, it is evident that the nucleus for improved traffic laws for motor vehicles upon our highways will result. Let us make the driver of every automobile financially responsible for injuries either to himself or the unfortunate individual whom he strikes. Compulsory insurance laws for automobile drivers will lead to proper mental and physical examinations of applicants for drivers' licenses.

As a retiring President's message, let it be said that the Kent County Medical Society stands higher today in the public opinion of this community than ever before. Let us continue the work so that at the end of each year the annual audit is a credit not only to our profession, but to every citizen of Grand Rapids and its vicinity.

HEALTH IN THE EDUCATION PLATFORM

The policies of the National Education Association are developed through a committee which presents a statement each year to be passed on by the representative body. The platform for the current year was approved by the representative assembly of the National Education Association at its annual session in Minneapolis, July 6. It is a significant statement, emphasizing the relationship of education to our government, and the importance of parent teacher contacts, of retirement systems and of securing tenure of office, of a live and developing curriculum, of Americaniza-

tion, and of the control of illiteracy in the adult. To physicians particularly one section of this platform will mean a great deal. Apparently the National Education Association recognizes that health, hygiene and a knowledge of the structure and function of the human body are fundamental to human happiness. This section of the resolution is quoted herewith in full:

Health and physical education: Health is winning increasing and clearer recognition as the fundamental objective in the entire program of public education. We recognize health education and health service for children as a definite and appropriate function of the public school. This objective should be defined as health of body, health of mind, and health of character. It is a primary function of the school to discover the health assets and health liabilities of the child, to conduct health inspection for the prevention and control of communicable disease, to keep a record of the health and growth of each child as a part of an educational record, to provide a healthful school environment, and to safeguard the life and health of the pupils in promoting all first aid and safety provisions against accident.

The purpose of health education is to bring to bear upon every child in the school the greatest possible number of influences favorable to the inculcation of habits, attitudes and knowledge desirable for individual and community health.

Physical education should put the major emphasis upon an extensive program of wholesome activities for all pupils, rather than the devotion of the facilities of instruction primarily to the more highly gifted and intensely developed few capable of winning victories and contests.

We indorse all movements in the communities and in the schools of the country for the promotion of physical education and mental health. We believe there is no greater objective in education than the ideal of a sound mind in a sound body.

Such a policy must be an inspiration not only to the teaching profession of the country, but also to the medical profession and particularly to the parents of the millions of children who are sent each day to our schools. What a pity that the adults of our generation could not have had a similar opportunity! The great problem of the present day is to make parents know as much as their children are learning about the human body in health and in disease.—*Jour. A. M. A.*, Oct. 6, 1928.

CHANGE IN CHARACTER OF POPULATION SEEN IN 1975

Fewer foreign born and fewer negroes, more in the age group over 50 and fewer, in the group under 15, are some of the changes in the population that will appear in 1975, according to prophecies of the Scripps Foundation, says P. K. Whelpton of the staff. The proportion of native whites is expected to increase from 77 to 85 per cent, that of foreign whites will decline from 13 to 6 per cent and that of negroes from 10 to 9 per cent. The age group under 15 now has about one-third of the population but in 1975 it will be only one-fourth. The group from 15 to 50 will remain about one-half the total population, while in the group over 50, there will be an increase, from the present population of one-sixth, to one-fourth. The urban population will be 69 per cent of the total in 1975, as compared with 51 per cent in 1920. This will be due to the decline in farming, but the actual change from rural to urban life will be greater, as the rural population in 1975 will probably consist to a greater extent than now of persons living in the country and working in the city.—*Science Service*.

Medical Practice Act

A BILL to amend sections 1, 3, 4 and 9 of Act number 237 of the Public Acts of 1899, as amended, entitled, "An Act to provide for the examination, regulation, licensing and registration of physicians and surgeons, and for the punishment of offenders against this act, and to repeal acts and parts of acts in conflict therewith", being sections 6724, 6726, 6727, and 6732, Compiled Laws of 1915, and to add a new section thereto to stand as section 7 (a).

THE PEOPLE OF THE STATE OF MICHIGAN ENACT:

1 SECTION 1. Sections 1, 3, 4 and 9 of Act number 237 of the Public Acts of 1899,
2 as amended, entitled, "An Act to provide for the examination, regulation, licens-
3 ing and registration of physicians and surgeons, and for the punishment of offend-
4 ers against this act, and to repeal acts and parts of acts in conflict therewith",
5 are hereby amended, and a new section to stand as section 7 (a) is hereby added
6 thereto, said amended sections and new section to read as follows:

7 SECTION 2. The governor shall appoint, by and with the * * * consent of the
8 senate, ten resident electors of the state, who shall constitute a board of regis-
9 tration in medicine. * * * The governor may select such appointees from the latest
10 lists filed in * * * his office * * * by the secretary of the Michigan State Medical
11 Society, such lists to contain at least treble the number of names as * * * there
12 are members to be appointed. * * * All persons so appointed shall be legally reg-
13 istered physicians of this state, shall be graduates in good standing of reputable
14 medical colleges, and shall have been actively engaged in the practice of medi-
15 cine in this state for at least six years immediately preceding the time of such
16 appointment. * * * The present members of said board shall continue in office until
17 the expiration of the terms for which they were appointed, and their successors
18 shall be appointed for terms of four years each. No member of said board shall
19 belong to the faculty of any medical college or university. The governor shall also
20 fill vacancies occasioned by death or otherwise, and may remove any member for
21 the continued neglect of duties required by this act. Vacancies in said board
22 shall be filled in accordance with the provisions of this act for the establish-
23 ment of the original board, and a person appointed to fill a vacancy shall hold
24 office during the unexpired term of the member whose place he fills. The busi-
25 ness of said board shall be transacted by and receive the concurrent vote of from
26 at least seven members.

27 SEC. 3. On and after the date of the taking effect of this act, all men and women
28 who are not already legally registered under act number 237 of the public acts
29 of 1899, and acts amendatory thereto, and who wish to begin the practice of
30 medicine, surgery and midwifery in any of its branches, in this state, shall make
31 application to the Board of Registration in Medicine, to be registered and for a
32 certificate of registration. This registration and certificate shall be granted to
33 such applicants as shall furnish satisfactory proofs of being at least twenty-one
34 years of age, and of good moral and professional character, but only upon com-
35 pliance with the following conditions contained in one or either of subdivisions
36 one and two of this section: *Provided, That such applicants shall, in addition to*
37 *complying with the requirements hereof, fully comply with any and all other con-*
38 *ditions and requirements provided by law:*

39 First. The applicant shall be registered and given a certificate of registration if
40 he or she shall satisfactorily pass an examination under the immediate authority
41 and direction of the board upon the following subjects: Anatomy, histology and
42 embryology, physiology, chemistry and toxicology, bacteriology, pathology, diagno-

sis, hygiene and public health, medical jurisprudence, diseases of the eye, ear, nose and throat, obstetrics, gynecology and surgery, and such additional subjects made necessary by advances in medical education as the board may designate, said examination to be conducted as follows:

(a) The examination may be taken as a whole in all of the subjects as aforesaid, and shall be designated as the primary-final examination, or said examination may be divided into a primary examination, upon the subjects of anatomy, histology and embryology, physiology, chemistry and toxicology, and bacteriology, and a final examination upon the remaining subjects as aforesaid, not included in the primary examination;

(b) The applicant shall file with the secretary of the board, at least one week prior to an examination, an approved application, through a blank furnished by the board, covering the detail of his or her personal history, and preliminary and medical education, and such other evidence of qualification as the board may require;

(c) The board may make such rules and regulations governing the conduct of the examinations as it shall deem necessary, and wilful violation of such rules and regulations shall subject the applicant to the loss of the examination and fee;

(d) The examination shall be made as practical as possible in order to test the applicant's qualifications as a practitioner of medicine, the method of which shall be in accordance with the board's best judgment, and may be a written, clinical, laboratory or oral examination, or a combination of one or more of the above methods;

(e) An average percentage of at least seventy-five per cent of correct answers on all the subjects listed under this section, and of not less than fifty per cent on each subject, shall be required of every applicant: Provided, That in the case of a qualified applicant who has been in reputable and legal practice at least five years, at the discretion of the board, this requirement of minimum percentage may be modified by the board to meet the necessities of the individual case. An accepted applicant for the primary-final examination, or for the final examination, as noted in subdivision one (a) of this section, shall have a diploma from a legally incorporated, regularly established and recognized college of medicine within the states, territories, districts and provinces of the United States, or within any foreign country, having as a minimum requirement a four years' course of eight months in each calendar year: * * * Students of medicine in regular attendance at a recognized medical college and endorsed by said board as having fulfilled the legal requirements of the state for entrance to, or matriculation in, recognized medical colleges, and who have completed, in accordance with the board's adopted minimum standard of medical education, in such recognized medical college, through attendance and examination, and not prior to the termination of the second year in such institution, among others the subjects of anatomy, histology, and embryology, physiology, chemistry and toxicology, and bacteriology, shall have the right to a primary examination, as recorded under subdivision one (a) of this section, upon prescribed subjects, said examination to be held at such times and places as may be determined by the board, and to receive from the board a certificate showing the credits received in the several subjects upon which an examination shall have been had as aforesaid, and such credits obtained shall, at the election of the student, be included in and form a part of the examination heretofore called the final examination under subdivision one (a) of this section: Provided, That subsequent to graduation from a recognized medical college, in said final examination for a certificate of registration the applicant shall, if presenting said credits to the board at the time of his or her application for examination be examined only in those remaining subjects prescribed under subdivision first of this section and which have not been listed as subjects of aforesaid primary examination. The applicant shall pay to the board a fee of twenty-five dollars prior to the examination, divided as follows: Ten dollars for the primary examination, and fifteen dollars for the final examination. If such examinations are taken together, or as a whole, the fee shall be twenty-five dollars for such primary-final examination. No additional fee for registration shall be charged to those who successfully pass the examinations. The board shall, in the recognition

1 of medical colleges, in its discretion, list such colleges in three or more classes or
2 groups: Group one including those colleges which fulfill the advanced require-
3 ments of this act and which maintain the board's standards of preliminary and
4 medical education; group two including those colleges which have fulfilled the
5 standard of medical education demanded by this state at the date of the diploma;
6 and group three including those colleges whose courses are recognized only for
7 advanced standing in recognized colleges listed under group one: Provided, That
8 a diploma issued by a medical college listed by the board in one or more of the
9 groups or classes as aforesaid, shall be recognized as a qualification under this act,
10 in the event only of its representing the actual standards of preliminary and med-
11 ical education within the provisions of this act. The board of registration in medi-
12 cine shall, from time to time adopt minimum standards of preliminary and medical
13 education, and no high school, academy, college, university or medical college, or
14 other institution or board, shall be approved and designated or its diploma or
15 certificate be recognized by said board under subdivision one of section three of
16 this act, unless in the judgment of the board, it conforms with such standard.

17 Second. * * * *Any person who has resided in this state for a period of at least one*
18 *year immediately preceding the date of application for registration under the pro-*
19 *visions of this act, and who shall have notified the said board of his or her inten-*
20 *tion to apply for registration at least one year prior to making such application,*
21 *may at the discretion of the board, be registered and given a certificate of regis-*
22 *tration if he or she shall present satisfactory proof of the possession of a certifi-*
23 *cate of registration or license which has been issued to said applicant within the*
24 *states, territories, districts or provinces of the United States, or within any fore-*
25 *ign country, where the requirements for the registration of said applicant at the*
26 *date of his or her license shall be deemed by said board of registration in medi-*
27 *cine to be equivalent to those of * * * the laws of this state. The fee for regis-*
28 *tration from applicants of this class shall be fifty dollars, and for the endorsement*
29 *of a certificate to another state five dollars;*

30 Third. The board is authorized to issue a license or certificate of registration to
31 any person who desires to practice a system of treatment of human ailments or
32 diseases, and who does not in such treatment use drugs or medicines, internally
33 or externally, or who does not practice surgery or midwifery, under the provi-
34 sions of this act: Provided, * * * *That such applicant for such license or certifi-*
35 *cate shall have complied with any and all educational requirements which are now*
36 *or hereafter may be required by law for license to practice the healing art in any*
37 *of the branches, and shall pass an examination before the board upon the following*
38 *subjects: Anatomy, histology, and embryology, physiology, chemistry, bacteriol-*
39 *ogy, pathology, diagnosis, hygiene and public health. This examination shall be*
40 *concurrent with and equivalent to the examination provided for practitioners of*
41 *medicine under section 3, subdivision 1, of this act, and shall be in harmony with*
42 *the provisions of this section and subdivision covering such examination in the*
43 *subjects as above specified: Provided, however, That such examination shall be a*
44 *continuous one and not subject to a division into a primary and a final examina-*
45 *tion. The fee for such examination shall be fifteen dollars. A practitioner under*
46 *this subdivision shall not be permitted to use in any form the title of "doctor" or*
47 *"professor" or any of their abbreviations, or any other sign or appellation to his*
48 *or her name which would in any way designate him or her as a physician or sur-*
49 *geon qualified under the provisions of section 3, subdivision 1 and 2 of this act, or*
50 *in violation of the provisions of this act. All persons granted a certificate of*
51 *registration or license under the provisions of this subdivision 3, shall also con-*
52 *form to the provisions of act number 237 of the Public Acts of 1899, and acts*
53 *amendatory thereto, except as provided in this subdivision: Provided, That all*
54 *practitioners described in section 3, part 3, who have been granted a diploma by*
55 *a college incorporated for the purpose of teaching their method of treatment and*
56 *who file with the state board of registration in medicine prior to October 1, 1913,*
57 *an affidavit stating that they have practiced in the state of Michigan for a period*
58 *of two years prior to September 1, 1913, shall be registered and authorized to*
59 *practice without examination under the provisions of section 3, part 3, of this act.*
60 A fee of five dollars must accompany each application for registration under this
61 provision;

Fourth. If any person shall unlawfully * * * cause himself or herself to be registered under this section, whether by false and untrue statements contained in his application to the board of registration of medicine, or by presenting to said board a false or untrue diploma, certificate or license, or one fraudulently obtained, he shall be deemed guilty of a felony, and upon conviction thereof shall be punished by a fine of not less than three hundred dollars nor more than five hundred dollars, or by imprisonment at hard labor for not less than one year nor more than three years, or both, at the discretion of the court, and shall forfeit all rights and privileges obtained or conferred upon him by virtue of such registration;

Fifth. Any person who shall swear falsely in any affidavit or oral testimony made or given by virtue of the provisions of this act, or the regulations of the board of registration of medicine, shall be deemed guilty of perjury, and, upon conviction thereof, shall be subject to all the pains and penalties of perjury;

Sixth. The board of registration of medicine may refuse to issue and/or * * * may revoke or suspend a certificate of registration or license provided for in this section, to any person found by a majority of said board to be guilty of grossly unprofessional and dishonest conduct. *Provided, that the board shall not refuse to issue or shall not revoke any such certificate under the provisions hereof until reasonable notice of such refusal to issue or intention to revoke or suspend shall have been given to the applicant therefor or holder thereof, together with a notice of the specific charges against him and the time and place of hearing thereof.* The words "unprofessional and dishonest conduct", as used in this act, are hereby declared to mean:

(a) The procuring, aiding or abetting in procuring a criminal abortion;

(b) The obtaining of any fee on the assurance that an incurable disease can be permanently cured;

(c) The wilfully betraying of a professional secret;

(d) All advertising of medical business in which grossly improbable statements are made, or where specific mention is made in such advertisements of venereal diseases or diseases of the genito-urinary organs;

(e) Having professional connection with, or lending one's name to an illegal practitioner of medicine; or having professional connection with any person or any firm or corporation who advertises contrary to the provisions of this section, or with any person who has been convicted in a court of competent jurisdiction under the provisions of this section;

(f) All advertising, of any nature or kind, of any medicine, or of any means for the regulation or re-establishment of the menses;

(g) All advertising of any matter of an obscene or offensive nature derogatory to good morals or contrary to act number 62 of the Public Acts of 1911;

(h) Employing or being employed by any capper, solicitor or drummer for the purpose of securing patients; or subsidizing any hotel or boarding house with a like purpose, or paying, or offering to any person, money or any other thing of value with a like purpose, or advertising to do so in any form whatsoever; or the division of fees in a consultation or a reference of a patient to a specialist, when no actual professional service is rendered by the physician referring the case, without the knowledge of the patient or the person concerned in the payment thereof;

(i) Being guilty of offenses involving moral turpitude, habitual intemperance, or being habitually addicted to the use of morphine, opium, cocaine, or other drugs having a similar effect; or of prescribing or giving away any substance or compound containing alcohol or drug for other than legal and legitimate therapeutic purposes;

Seventh. It shall be a misdemeanor for any person to be guilty of "unprofessional and dishonest conduct" as defined in this act. Any person who has been issued a certificate or registration or license under this act, and who shall be charged with the commission of such misdemeanor, shall be tried in a court of competent criminal jurisdiction, and upon conviction thereof shall be fined for each offense not to exceed two hundred and fifty dollars, or shall be imprisoned in the county jail not to exceed three months, or may be both fined and imprisoned,

1 in the discretion of the court. The creation of such misdemeanor by this act shall
2 not be construed to supersede any existing remedy or punishment, whether civil or
3 criminal, for any act embraced within the provisions of this act, but shall be con-
4 strued to be in addition thereto.
5 *In addition to the provisions hereinbefore provided for the refusal to issue, revoca-*
6 *tion or suspension of a license or certificate,* the board of registration in medicine
7 may, upon the filing with it of a duly certified copy of a final conviction obtained
8 in accordance with the provisions of this act, revoke or suspend for a limited period,
9 not less than six months, the certificate or license of the person so convicted. The
10 said board of registration in medicine may also revoke any certificate of registra-
11 tion or license of any person guilty of a criminal offense created by or embraced
12 within the provisions of this act, or within the provisions of any state, provincial,
13 territorial or federal act in the United States or in foreign countries, when such
14 criminal offense or such fraud or perjury shall have been legally established in a
15 court of competent jurisdiction. Said board may also revoke any certificate of
16 registration or license heretofore or hereafter granted upon mistake of material
17 fact or by reason of fraudulent misrepresentation of fact by such applicant. Any
18 person charged with a violation of the provisions of this subdivision 7 of section
19 3 shall have a fair hearing before the board, upon sufficient notice of such hearing:
20 Provided, That this section shall not apply to such forms of contract practice as
21 are from time to time endorsed by this board.

22 SEC. 4. The person receiving a certificate of registration shall file the same, or a
23 certified copy thereof, with the county clerk in * * * *each county* * * * *where he*
24 *practices,* and said clerk shall file said certificate or the certified copy thereof,
25 and enter a proper memorandum thereof in a book to be provided and kept for that
26 purpose, and may collect therefor a fee of fifty cents for each certificate or copy
27 thus filed. And said county clerk shall, on the first day of each month, furnish
28 to the secretary of said board a list of all certificates filed in his office during
29 the preceding month on a blank provided for that purpose, and upon notice to him
30 of the change of location or death of a person granted a certificate, or upon the
31 revocation of the certificate granted such person, said county clerk shall enter at
32 the appropriate places in the record so kept by him a memorandum of said facts;
33 so that the record so kept by said county clerk shall correspond with the records
34 of said board, so kept by the secretary thereof. In case a person having thus filed
35 a certificate shall move into another county of the state, he shall procure from
36 said county clerk a certified copy of said certificate, and file the same with the said
37 county clerk of the county to which he shall so remove. Said county clerk shall
38 file and enter the same with like effect, as if the same was the original certificate.

39 SEC. 7 (a). *The attorney general, prosecuting attorney, board of registration in*
40 *medicine, or any citizen of any county, where any person shall engage in the prac-*
41 *tice of medicine, chiropractic or drugless healing as provided herein, without first*
42 *having obtained a license so to do, may maintain a suit in the name of the people*
43 *of the state of Michigan in the circuit court in chancery of the county in which*
44 *any such person shall engage in practice to enjoin such person engaging in such*
45 *practice until he shall secure the license or certificate provided for herein. And*
46 *any person who has been so enjoined who shall violate such injunction shall be*
47 *punished for contempt of court provided that the institution of such proceedings*
48 *shall not relieve such person so practicing without a license or certificate from a*
49 *criminal prosecution therefor as provided by law but such remedy by injunction*
50 *shall be in addition to any remedy now provided for the criminal prosecuting of*
51 *such offender.*

52 SEC. 9. Any person who shall append the letters "M.D." or "M.B." or other let-
53 ters in a medical sense, or shall prefix the title "doctor" or its abbreviation, or
54 any sign or appellation in a medical sense, to his or her name, *or who shall own*
55 *or operate an institution where treatments for human ailments are given without*
56 *being given under the full direction of registered physicians and nurses, excepting*
57 *those institutions owned or operated for the practice of chiropody or dentistry,* it
58 shall be prima facie evidence of practicing medicine within the meaning of this
59 act. In this act, unless otherwise provided, the term "practice of medicine" shall

1 mean the actual diagnosing, curing or relieving in any degree, or professing or
2 attempting to diagnose, treat, cure or relieve any human disease, ailment, defect,
3 or complaint, whether of physical or mental origin, by attendance or by advice, or
4 by prescribing or furnishing any drug, medicine, appliance, manipulation or
5 method, or by any therapeutic agent whatsoever.

Professional Qualifications Act

A BILL to prescribe the educational qualifications of applicants for license to practice the healing art, as defined herein; to create a Board of Professional Registration, and to define the powers and duties thereof; and to prescribe penalties for violations of the provisions thereof.

THE PEOPLE OF THE STATE OF MICHIGAN ENACT:

1 SECTION 1. A Board of Professional Registration to consist of nine members is
2 hereby created to carry out the provisions of this act. The members of said
3 board shall be appointed by the Governor within thirty days from the effective
4 date of this act, and shall be chosen from teachers of professorial rank at any
5 university or college in this state authorized by law to confer the Bachelor of
6 Science, Bachelor of Arts, Master of Science or Master of Arts degrees, except
7 those schools or colleges known as Normal Schools or Normal Colleges. Three
8 members of said board shall serve for a term expiring the first day of July, 1931;
9 three members of said board shall serve for a term expiring the first day of July,
10 1932; and three members of said board shall serve for a term expiring the first
11 day of July, 1933, and upon the expiration of the terms of each of such members,
12 the Governor shall appoint their successors for terms of six years. The Gov-
13 ernor shall have the power to fill any vacancy on said board, and the person ap-
14 pointed to fill any vacancy shall serve for the unexpired term of the office vacated.

15 SEC. 2. The members of the Board of Professional Registration shall, within two
16 weeks after their appointment, meet at the State Capitol at Lansing, and shall
17 then elect a president and secretary from their own members, said officers to hold
18 office for a period of one year or until their successors are elected. The secretary
19 shall execute and file with the Secretary of State a bond running to the State of
20 Michigan in the penal sum of five thousand dollars, with sufficient sureties, to be
21 approved by the Governor, for the faithful discharge of his duties. Said board
22 shall meet at such times and places as shall be determined by said board for the
23 purpose of conducting the examinations hereinafter provided for, and for the pur-
24 pose of any and all other business to come before said board. Not less than six
25 members shall constitute a quorum of said board for the transaction of business:
26 Provided, That any action taken by said board shall require the affirmative
27 vote of five members thereof. The members of said board shall receive as com-
28 pensation not to exceed ten dollars per day for each day said members shall attend
29 the active session of said board, and their necessary traveling expenses incident to
30 the performance of their duties hereunder: Provided, That the secretary of said
31 board shall receive a salary of eighteen hundred dollars annually, to be paid at
32 the times and in the manner as salaries of state officers and employees are paid.

33 SEC. 3. The term "art and science of healing" as used herein, shall mean to ex-
34 amine into the fact, condition or cause of human health or disease, or to treat,
35 operate, or advise for the same, or to undertake, offer, advertise, announce or hold
36 out in any manner to do any of said acts, for compensation, direct or indirect, or
37 in the expectation of compensation: Provided, That nothing in this act shall ap-
38 ply to applications for a license to practice dentistry, optometry, chiropody, nor
39 to those persons seeking a license to confine their ministrations to the sick or af-
40 flicted, as nurses, nor to those who administer to the sick or afflicted by means of
41 prayer.

42 SEC. 4. On and after the effective date of this act, all persons who are not the
43 holders of legal licenses to practice the art and science of healing, shall, before
44 making application to any board of registration having the power to issue licenses

1 to practice the art and science of healing in any of its branches, secure from the
2 Board of Professional Registration the following certificates:

3 (a) A certificate issued by said board and signed by its president and secretary,
4 that such person has satisfactorily completed a four years' high school course, or
5 equivalent high school credits.

6 (b) A certificate issued by said board and signed by its president and secretary
7 that said person has secured sixty hours of collegiate credit as hereinafter speci-
8 fied and has satisfactorily passed the examination before said board, if, in the
9 opinion of said board, such examination shall be necessary. No board of registra-
10 tion or examination having power to issue licenses to practice the art and science
11 of healing, in any of its branches, shall accept for examination any person who is
12 not the holder of the certificate specified in this section.

13 SEC. 5. In order to secure from said board the certificate specified in subdivi-
14 sion (a) of section 4 hereof, each person shall fill out a blank to be provided by
15 the board for such purpose, upon which shall appear the name of the applicant,
16 place and time of birth, nationality, name, place and time of attending the high
17 school or schools, a list of credit units secured, and such other information as
18 the board shall require, which blank shall be signed by the applicant and by the
19 superintendent or principal of the high school attended. Upon receipt of such
20 blank properly signed, the Board of Registration shall examine the same and if
21 such high school credits equal a total of fifteen units, and said school or schools in
22 which said credits were secured are on the approved list of the North Central
23 Association of Colleges and Secondary Schools, or schools of equal rank therewith,
24 said board shall issue to the applicant the certificate specified in subdivision (a) of
25 Section 4 hereof. Every application for such certificate shall be accompanied by
26 a fee of one dollar.

27 SEC. 6. In order to secure from said board the certificate specified in subdivision
28 (b) of section 4 hereof, each applicant shall fill out a blank to be provided by
29 said board, upon which shall appear the name of the applicant, time and place of
30 birth, nationality, name of college, university or school attended and time of at-
31 tendance, together with a list of college credits secured, which shall include Eng-
32 lish Language, (Grammar, Rhetoric and English Literature) six hours; Biology,
33 Botany, Zoology, General Biology), eight hours; Chemistry (Inorganic, Qualita-
34 tive Analysis, Quantitative Analysis, organic), eight hours; Physics, eight hours;
35 Modern Language (French or German or both), six hours; and such other in-
36 formation as the board shall direct. Said blank shall be signed by the applicant
37 and by the proper college officers having knowledge of the facts therein contained,
38 and shall be forwarded to the Board of Professional Registration, together with
39 an examination fee of ten dollars, not less than ten days prior to the time of hold-
40 ing the examination hereinafter provided for.

41 SEC. 7. All persons who have complied with the provisions of sections 5 and 6
42 hereof, and who shall have a minimum of sixty hours of college credit from a col-
43 lege or university approved by said board, shall be eligible for examination before
44 the Board of Professional Registration, and shall be required to take the same at
45 the discretion of the Board, which examination shall be held at such time and
46 place as shall be determined by the Board. Such examination shall embrace the
47 subjects enumerated in Section 6 hereof, and such other subjects as the board
48 shall determine: Provided, That such examination shall include at least eighty
49 per cent of the sixty semester hours college credits claimed by the examinee; and
50 provided further, that an average of at least seventy-five per cent shall be re-
51 quired for the passage of any examination, and no person shall be allowed to pass
52 who shall receive a grade of less than fifty per cent on any one subject.
53 The board shall make such rules and regulations governing the conduct of exam-
54 inations as it shall deem expedient, and wilful violations thereof shall subject the
55 applicant to the loss of the examination fee, and shall bar him from the privilege
56 of further examination for a period of two years. Each person who passes said
57 examination shall be entitled to receive the certificate provided for in subdivision
58 (b) of section 4 hereof; Provided, That the board may, in its discretion, accept

- 1 in lieu of such examination, a bachelor's degree from any college or university
- 2 approved by said board.
- 3 SEC. 8. Any person who shall fraudulently or unlawfully obtain either of the
- 4 certificates specified in section 4 hereof, shall be guilty of a felony, and upon con-
- 5 viction thereof shall be punished by a fine of not less than three hundred nor
- 6 more than one thousand dollars, or by imprisonment in the state prison for not
- 7 less than one nor more than two years, or both such fine and imprisonment in
- 8 the discretion of the court.
- 9 SEC. 9. All sums of money received by said board shall be paid to the state treas-
- 10 urer not later than thirty days after the receipt thereof, and shall be credited to
- 11 the general fund.
- 12 SEC. 10. All acts and parts of acts inconsistent herewith are hereby repealed.

OAKLAND COUNTY

Dr. Frederick A. Baker was re-elected president of the Oakland County Medical society, which held its 98th annual meeting at the Board of Commerce.

Dr. D. G. Castell was named vice president, Dr. Isaac C. Prevette was re-elected treasurer and Dr. C. A. Neafie again was chosen secretary.

On the board of directors will be Dr. Robert Y. Ferguson, Dr. B. M. Mitchell and Dr. Harry A. Sibley.

Dr. Robert H. Baker and Dr. Joseph Morrison of Royal Oak, have been re-elected delegates to the Michigan State Medical Society convention.

Alternate delegates will be Dr. Frank Mercer and Dr. George P. Raynale of Birmingham.

Discussion of business details was the main feature of the evening, according to Dr. Neafie, secretary. Dinner preceded the meeting.

SHIAWASSEE COUNTY

The annual election of officers of the Shiawassee County Medical Society occurred on Tuesday evening, December 4th, when the following were elected for the year 1929:

President, Dr. W. F. Weinkauff, Corunna.
 Vice President, Dr. F. A. Watts, Owosso.
 Secretary-Treasurer, Dr. W. E. Ward, Owosso.
 Delegate, Dr. I. W. Greene, Owosso.
 Alternate, Dr. W. E. Ward, Owosso
 Medico-Legal Representative, Dr. A. M. Hume, Owosso.
 Board of Directors, Dr. J. J. Blue, Dr., A. L. Arnold, Jr., and Dr. C. A. Crane, Corunna.
 W. E. Ward, Secretary.

MACOMB COUNTY

There were nine meetings held by our Society during the year 1928.

Meetings were suspended for the summer months, July, August and September.

January meeting—Dr. Laird of Detroit gave a paper on Eye, Ear and Nose and Throat Work.

February meeting—Dr. D. Stiefel of Detroit gave an illustrated talk on "Orthopaedics."

March meeting—Dr. Loren W. Shaffer of Detroit presented a paper on "The Treatment of Syphilis."

April meeting—Dr. G. C. Burr of Detroit—"Tuberculosis of the Kidney," illustrated with motion pictures.

May meeting—The members of the dental pro-

fession of Macomb county were guests at this meeting. The program was a motion picture on "How Biological Products are Made," presented through the courtesy of the Parke-Davis company, Detroit.

June meeting—Business meeting. Dr. J. H. Montgomery of Richmond, Michigan, was elected to membership in the Society.

July, August and September—Suspension of meetings for the summer.

October meeting—Dr. George McKean of Detroit gave a talk on "Pneumonia."

November meeting—Dr. George Van Amber Brown of Highland Park, Michigan, gave an illustrated talk on "Female Pelvic Infections."

December meeting—The following were elected for the year 1929: President, Dr. A. B. Bowers, Armada; Vice President, Dr. T. P. Russell, Centreline; Secretary, Dr. J. N. Scher, Mt. Clemens; Treasurer, Dr. W. H. Norton, Mt. Clemens; Delegate to the 1929 meeting of the Michigan State Medical Society, Dr. V. Wolfson; Alternate, Dr. A. A. Thompson.

J. N. Scher, Secretary.

BERRIEN COUNTY

The Berrien County Medical Society met in Benton Harbor on November 21st at the Hotel Vincent.

Dinner was served at 6:30 to about 50 members and guests, the Society acting as host to the Tri-County Dental Society, composed of dentists from Berrien, Cass and Van Buren Counties.

Following the dinner the two societies held separate business meetings, returning to the ball room to listen to a paper on "Malignancies of the Mouth and Face."

At the business meeting of the Medical Society a nominating committee was elected consisting of Doctors Sowers, Rosenberry and Merritt, to bring in nominations for the 1929 officers at the December meeting which will be held in Niles.

The paper of the evening was to have been given by Dr. Ferris Smith of Grand Rapids. Dr. Smith, however, was unable to be present and in his place sent his associate, Dr. Mills.

Dr. Mills with the aid of a lantern, gave an excellent talk on "Malignancies of the Head," and dwelt particularly on operative procedures. The restoration of radical destructive operations as worked out by Dr. Smith is exceedingly interesting and has proven successful under his management as well as under others who have followed his procedures in plastic surgery of the face.

Although the Society was disappointed in not having Dr. Smith personally present, the pleasing

delivery and knowledge of Dr. Mills made up for his absence.

The discussion was opened by Doctors Westervelt and McDermott for the medics. Doctors Brown, Globensky and Musser discussed the paper from the viewpoint of the dentists.

The Dental Society expressed their pleasure at being invited to listen to a topic of mutual interest and the joint session was enjoyed by all present.

W. C. Ellet, Secretary.

GENESEE COUNTY

Report of the Genesee County Medical Society for the month of October:

Meeting held October 3, 1928 at Hotel Dresden.

Dr. McKenna in the chair.

Minutes of the last meeting read and approved.

Dr. M. S. Knapp and Dr. H. Cook urged the members to contribute promptly toward furnishing chairs for the auditorium.

Election of officers for 1928-1929 as follows:

President-Elect, Dr. Don Knapp; Treasurer, Dr. R. Scott; Medico-Legal Officer, Dr. C. H. O'Neil; Delegates, Dr. C. Moll, Dr. M. S. Knapp, Dr. F. Reeder; Alternate Delegates, Dr. G. Curry, Dr. J. G. R. Manwaring, Dr. W. Winchester.

Dr. Howard B. Lewis of the University of Michigan gave a talk on "Vitamines." Discussion followed. Meeting adjourned.

M. S. Chambers, Secretary.

Meeting held October 17, 1928 at Hotel Dresden.

President Benson in the chair. Minutes of the last meeting read and approved. Dr. M. S. Knapp reported on the progress of the auditorium furnishings committee.

A communication from the State Secretary concerning the organization of a Genesee County Women's Auxiliary in preparation for future legislative campaigning was read. Discussion followed. Dr. White moved that further information concerning this matter be obtained from the State Secretary. Motion seconded and passed.

Dr. L. H. Newburgh of the University of Michigan gave a talk on "The Present Day Status of Renal Function Tests." Discussion followed. Meeting adjourned.

M. S. Chambers, Secretary.

Meeting held October 25th, 1928.

At the request of the State Secretary a legislative committee was appointed by President-Elect Dr. Don Knapp as follows:

Dr. H. Cook, Chairman; Dr. C. Moll, Dr. J. G. R. Manwaring, Dr. H. Randall, Dr. W. H. Marshall.

M. S. Chambers, Secretary.

Report of the Genesee County Medical Society for the month of November:

Meeting held November 7th, 1928.

Dr. Don Knapp, President-Elect in the chair. Minutes of the last meeting read and approved.

Reply to Dr. Warnshuis, relative to Women's Auxiliary, read before the meeting. It was discussed by various members and a motion made and seconded that Mrs. Keifer come and instruct wives of members and members relative to organization.

New members applications read—Huyck, Ditrach, Macksoo and Grover.

Dr. E. C. Rumer and Dr. Runyan re-instated.

Dr. L. Jones, Dr. A. McArthur and Dr. Max Burnell was appointed to report relative to a different meeting place.

Dr. Barttemeir of Detroit presented the subject, "Work of Psychiatry."

Meeting adjourned.

F. E. Reeder, Secretary, Pro-Tem.

Meeting held November 21, 1928.

President-Elect Dr. Don Knapp in the chair. Minutes of the last meeting read and approved. Dr. Jones reported for the committee appointed to investigate the advisability of having G. C. M. S. meetings at Hurley Hospital.

Dr. H. Knapp moved that this committee be discharged. Motion seconded and defeated. Dr. Max Burnell moved that future meetings be held at Hurley Hospital. Motion seconded and passed.

Dr. Randall moved that the G. C. M. S. purchase copies of the A. M. A. code of ethics and distribute one copy to each member of the Society. Motion seconded and passed.

Dr. Jones moved that the G. C. M. S. appropriate \$100 for purchase of medical books and periodicals for Hurley Hospital library for the fiscal year of 1928. Dr. Himmelberger amended this motion to read that \$200 be appropriated instead of \$100. Dr. Willoughby amended the amendment to read \$300 instead of \$200. Amended amendment revealed and defeated. Dr. Himmelbergers amendment seconded and passed. Original motion as amended seconded and passed.

Dr. T. G. Yeomans of St. Joseph, Michigan, gave a talk on "The Management of Salpingitis." Discussion followed. Meeting adjourned.

M. S. Chambers, Secretary.

GRATIOT-ISABELLA-CLARE COUNTIES

The December meeting of the Gratiot-Isabella-Clare Medical Society was held at the Park House, St. Louis, Thursday, December 13, 1928.

President Barstow called the members together with the following present: Barstow, Budge, Aldrich, DuBois, Smith, Graham and Highfield. Minutes of the last annual meeting and the November meeting were read and approved.

Secretary Highfield then gave his annual report, which stated we had held nine meetings during 1928, seven of which had been addressed by out-of-town speakers.

President Barstow then announced that nominations were in order for officers for 1929. The following were duly elected:

President, Charles F. DuBois.

Vice President, Melvin J. Budge.

Secretary-Treasurer, E. M. Highfield.

Delegate to State Society, W. E. Barstow.

Alternate to State Society, M. J. Budge.

At this time supper was announced, fourteen having supper together, two coming in after supper.

President Barstow then called on Dr. Charles F. DuBois, to read the resolutions on the deaths of Dr. J. N. Day and Dr. C. M. Denny, of which the following is a copy.

It is the desire of the Gratiot-Isabella-Clare County Medical Society, that proper records be spread upon the minutes of this meeting to permanently record the recent death of two of its members: Dr. John N. Day, age 63 years,

Alma, and Dr. Carlisle M. Denny, age 41 years, Middleton.

Dr. Day was struck by a P. M. R. R. passenger train on November 5th, while driving an automobile; a basal skull fracture resulted, and he died November 8th. He was born in Eaton county, Michigan, was a member of the first graduating class of the Alma High school, and then attended Alma College before it was taken over by the Presbyterian church. After teaching in the Blanchard schools, he studied pharmacy and was registered in 1888.

Dr. Day graduated from the Detroit College of Medicine in 1893, and practiced in Ashley, Bannister, Lake Odessa and Alma. Aside from his professional work the doctor was very active in the Masonic Lodge and the Isaac Walton League.

Dr. Denny died November 27th, following a pneumonia of two weeks' duration. He was born in Mountain Grove, Missouri, and graduated from high school in that city. He received his medical degree in 1911, from the Chicago College of Medicine and Surgery. Following this he served one year's internship at the Blodgett Memorial hospital, Grand Rapids.

Dr. Denny has always practiced at Middleton. His fraternal activities were extensive in the Masonic order.

The Society keenly feels the loss of these two members, both as to membership in this Society and in the communities where they were active.

Following this, President Barstow introduced Dr. B. W. Malfroid of Flint, who read a paper on "The Toxaemia of Pregnancy." The doctor described many of the past theories of the cause of this condition, and stated that the most acceptable explanation today was, that it was a placental poisoning frequently due to a focal infection injuring the placenta. The best treatment was prevention by having focal infection removed.

For the nausea he gives glucose, either subcutaneous or intravenous. For the convulsions, in addition to other treatment, he gives 10 c.c. of a 25 per cent solution of magnesium sulphate intravenously. This paper was discussed by nearly everyone present, all asking the doctor many questions.

A rising vote of thanks was given Dr. Malfroid, after which many gathered around to ask him more questions on obstetrical difficulties.

KALAMAZOO COUNTY

SECRETARY'S REPORT

The last regular meeting of the Academy of Medicine was held November 20th in the Academy rooms. About 40 members were present for dinner.

Meeting called to order by the President, Dr. W. E. Shackleton.

The minutes of the previous meeting as printed in the bulletin were approved.

Dr. J. B. Jackson read the resolutions drawn by his committee. It was moved that they be adopted and a copy be sent to Mrs. Harold Upjohn and

that they be printed in the bulletin next month. Seconded. Carried.

Dr. Ward Collins' resignation as the Academy's representative at the Child Welfare meetings was read and accepted. Dr. Bennet nominated Dr. L. J. Crum as the Academy's representative at these meetings. Seconded and carried.

Dr. Crane read the resolutions of the Kellogg Multilateral Peace Treaty and moved its approval by the Academy. Seconded by Dr. Stewart. A standing vote was taken and their unanimous approval was given.

An invitation from the Upjohn Company to the Academy to be their guests at the annual banquet was extended. The Academy was unanimously in favor.

The president asked for the wishes of the Academy in regard to the nominating committee. Moved by Dr. C. E. Boys that this committee be appointed by the Chair. Seconded and carried. The following members were appointed to nominate candidates for 1st Vice President, 2nd Vice President, 3rd Vice President, Treasurer, Librarian and two board of Censors; Doctors W. R. Vaughn, Chairman; G. M. Riley, D. C. Rockwell, L. E. Westcott and A. A. McNabb.

The following members were appointed on the auditing committee: Doctors R. A. Morter, Chairman; George H. Caldwell and S. U. Gregg.

The scientific program was given by Dr. D. U. Eisendrath. The subject of Cystitis was presented in a very clear, concise and definite way and illustrated by lantern slides. Dr. Eisendrath's pleasing manner, good stories and wit made this especially enjoyable as well as instructive. The discussion was general indicating much interest in this subject. We hope he comes again.

After the program the recommendations of the special committee on city clinics, which has been on the table for a few months was opened for discussion. After much discussion the following recommendations were approved by the Academy.

Classification of individuals applying for services.

- A. Permanently indigent.
- B. Temporarily indigent until given date.
- C. Worthy of care on presentation of security.
- D. All persons unworthy of free care.

It is recommended that the investigation of all cases be made by an individual, responsible to the city government, and that this investigation be assisted in every way possible by a committee of physicians appointed by The Academy of Medicine, following a plan now in operation in the city of Chicago. This official shall issue a card to each individual applying for charity.

It is recommended that an Infants Clinic be held at Gull street station once a week for Classes A. and B. and that a general educational program for mothers and babies be held at intervals of six months, and that all lay organizations be assured that the Academy of Medicine will co-operate to the fullest extent along the lines of the present pre-school clinic.

In the management of private pay patients in the contagious disease hospital, we feel that the treatment of such patients should remain in the hands of the physician sending in the case.

It is the feeling that the Public Health nurses should be warned against diagnosing and prescribing. It is recommended that in no case shall quarantine be lifted by a nurse without the sanction of the attending physician.

It is recommended that the custom henceforth

be, that the physician shall render a fee for his services for all cases whether treatment is rendered in free beds or not.

Dr. Crum moved that a committee be appointed to go to the proper authorities to see what may be done, etc. Seconded by Dr. Henwood. Carried.

PRESIDENT'S ANNUAL REPORT

The president wishes to take this opportunity to express his appreciation for the loyal support of the Academy during the past year. He realizes full well that the Society's progress and success has been due to your loyalty, and to the untiring efforts and co-operation of the officers and committees. The program and clinical program committees are to be particularly commended for the excellence of the programs. The social committee has made possible the fellowship dinners which we all so much enjoy. Other committees have been equally industrious although their work is not so spectacular.

The executive committee has seen fit to expend an unusual amount of the Society's funds for re-decorating the rooms and adding to our equipment. Most of the work is very evident and fully justifies the expenditure. In retiring from the executive office we would recommend further expenditures for the benefit of our scientific programs. A new projection lantern is badly needed in order to obtain the best results from our guests who wish to illustrate their addresses with lantern slides. A ventilating fan back of the grill over the speaker's desk would clear the atmosphere and allow the members to enjoy clearer vision as well as clearer heads.

In view of the excellent work of the legislative committee and the importance of the coming program outlined by our State Society we take the liberty of suggesting that this committee be continued with its present personnel.

Continuance of our loyalty and co-operation with the new officers will mean bigger and better meetings with prosperity for the Society and each individual member.

ANNUAL FINANCIAL REPORT OF KALAMAZOO MEDICAL ACADEMY

Dues from members.....	\$1,918.00
Refund from State for G. J. Sweetland dues.....	10.00
Surplus of dues from Russell Collier.....	2.00
Price of golf balls from W. E. Shackleton.....	6.00
Total receipts.....	\$1,936.00

DISBURSEMENTS

State Society	\$1,180.00
Guests	153.57
Bulletins	186.00
Postage and stationery.....	68.93
Telegraph and telephone.....	76.35
Light and gas.....	12.90
Flowers	35.30
Insurance	35.00
Janitor	91.50
Miscellaneous	748.56

Total disbursements.....	\$2,588.11
Cash on hand December 8, 1928.....	\$ 811.24
Total Receipts for 1928.....	1,936.00

Total Disbursements for 1928.....	\$2,747.24
Cash on Hand December 7, 1928.....	159.13
Total.....	\$2,747.24

R. J. Hubbell.

SECRETARY'S ANNUAL REPORT

The President has been very kind to mention many of the accomplishments and activities of the Academy in his report, thereby relieving Secretary of some concentration.

The program, clinical program and social function committees, which are necessarily the power behind the throne in regard to our meetings, deserve honorable mention. Their support has always been generous and prompt and has greatly relieved many unpleasant tasks that ordinarily are bothersome to a secretary.

The members in general have given their loyal support, but, as is usual in every society of this nature, some feel their duties are done when the dues are paid. Regular attendance at the meetings will be well rewarded in good fellowship, scientific knowledge and relaxation from routine.

SAINT CLAIR COUNTY

A regular meeting of the Saint Clair County Medical Society was held at the Hotel Harrington, Port Huron, Michigan, Thursday, December 13, 1928. Supper was served to two guests and four members at 6:30 p. m. The meeting was called to order at 8:30 p. m. with the following members present: Doctors Smith, Wellman, McKenzie, H. O. Brush, DeGurse, Caster, Clancy, Thomac and Kesl. Doctors Frank MacKenzie and Harry Kirschbaum of Detroit were present as guests.

The Secretary read a communication from Dr. J. H. Burley relative to the establishment of a Tuberculosis Sanatorium in this county. A card of thanks from the family of Dr. J. H. Burley for the floral sent to the funeral of Mrs. J. H. Burley. Also a notice from Mrs. Lillian Innes, a trained nurse who wanted the Society to know that she was prepared to do hourly and obstetrical nursing.

The President appointed a Committee of Doctors Burley, Waters and DeGurse to look into the matter of a Tuberculosis Sanatorium.

The subject of recent circulars about the city relative to anti-vaccination for smallpox was brought up by Dr. H. O. Brush and remarks were made upon the subject by Doctors DeGurse, Caster and Smith and no action was proposed or taken.

The new article recently appearing in the columns of our local daily relative to a survey made in Port Huron Hospital was discussed by Doctors Clancy, Smith, Thomas, McColl, McKenzie and others and the consensus of opinion of those present was that the article might, in the end, work for the campaign of obtaining a new hospital for our community.

Dr. Frank MacKenzie of Detroit then addressed the Society upon the subject of the use of Radium in present-day medicine. "Radium," said Dr. MacKenzie, "is not a cure-all by any means, but it surely has a place in present-day treatment of certain selected conditions." The essayist stressed results obtained in several cases coming into his personal practice where at least several apparent cures and many improvements took place. Discussion by Doctors McColl, DeGurse, Caster and Smith was followed by Dr. Frank MacKenzie who closed his subject in the usual manner.

Dr. Harry Kirschbaum of Detroit addressed the Society upon the immediate repair of lacerations of the cervix, perineum and hemorrhoidectomy at the end of the third stage of labor and cited his own results in fifty cases treated in this manner. He said he believed gyno-plastic repair was feasible and in the future all cases treated in hos-

pitals for confinement would be given such operative care. Dr. Kirschbaum then proceeded, by means of lantern slides, to explain the application of Kielland forceps in a posterior presentation with a mannikin. "I believe," said Dr. Kirschbaum, "that the Kielland forceps will accomplish anything that can be accomplished by any of the other instruments." Discussion by Doctors Mc-

Coll, H. O. Brush, DeGurse, Smith and Caster was followed by closing of the subject in the usual manner by the speaker. The President thanked both of the visitors for appearing before the Society and giving their addresses.

The meeting adjourned at 10:45 p. m.

George M. Kesl, Secretary.

THE DOCTOR'S LIBRARY

Offering Suggestions and Recommendations

A TEXT-BOOK OF PATHOLOGY—William G. MacCallum, M. D., Professor of Pathology and Bacteriology, Johns Hopkins University. Fourth edition, thorough revised. Octavo volume of 1,177 pages with 606 original illustrations. W. B. Saunders Company, Philadelphia and London.

This is the fourth revision of this work since its publication in 1916 and it may be said to present the accepted facts of pathology as recognized today. It represents the autopsy experience of the Johns Hopkins Medical School so far as the more common diseases are concerned. The work deals with subjects that are of first hand information of the pathologist, and either gives limited space or omits entirely such subjects as immunity acid base equilibrium or cardiac arrhythmias.

No attempt, according to the author, has been made at a division into general and special pathology. The work is based on the principle that all pathological disturbances are the result of some form of injury or of the immediate or more remote reactions of the body to injury. Disease is dealt with as far as possible on the basis of the causative factor. The writer deals interestingly with what might be termed perverted physiology and of the chemical interchange in the course of disease thus making his book a valuable aid to clinical medicine. The work is profusely illustrated; a number of the illustrations are the finest specimens of the medical artist's work. Although this text book of pathology contains sixty-three chapters and over eleven hundred pages it is easy to handle owing to the superior quality of paper and binding that have reduced the bulk as compared with many other works containing such a volume of reading matter.

NEUROLOGICAL EXAMINATION—An exposition of tests with interpretation of signs and symptoms. Charles A. McKendree, M. D., Associate, Department of Neurology, College of Physicians and Surgeons, Columbia University. With a foreword by Henry Alsop Riley, M. D. Twelve months of 280 pages with 88 illustrations. W. B. Saunders Company, Philadelphia and London.

This little work is intended to familiarize the medical reader with a comprehensive form of examining the central nervous system. The various tests are described and in many instances illustrated by means of photographs. Abnormal reactions are interpreted as pathological expressions of interference with anatomical relations and physiological functions. The methods of examination as here described are those in use in the department of neurology in the College of Physicians and Surgeons, Columbia University and the Vanderbilt Clinic. The different sections include one on history, on physical examination, on general sensory examination cerebral nerves, systemic examination, skeletal system, mental status and laboratory tests. All this is followed by an interesting chapter on "Diagnostic Impressions."

REGIONAL ANESTHESIA—Gaston Labat, M. D., Clinical Professor of Surgery, University and Bellevue Hospital Medical College, New York City, Laureate of the Faculty of Sciences, University of Montpellier; Laureate of the Faculty of Medicine, University of Paris; Formerly Special Lecturer on Regional Anesthesia; The Mayo Foundation, University of Minnesota. With a foreword by William J. Mayo, M. D. Second Edition, Revised. Octavo of 567 pages with 367 original illustrations. W. B. Saunders Company, Philadelphia and London.

Doctor Labat's book on Regional Anesthesia is very interesting reading and covers the subject very thoroughly. Of interest, is the fact, that he definitely states that regional cannot supplant general or other forms of anesthesia. He also speaks of the type of patient both physical and mental—the type of operation—and the use of careful preparation of these patients for any operation in which they are to be conscious. It is undoubtedly true that regional anesthesia has come to stay and will in the future increase its field of usefulness. His book is easy reading material, interesting and excellently illustrated.

CONSTITUTIONAL FACTORS IN HYPERTENSIVE DISEASE

Joseph H. Barach, Pittsburgh (Journal A. M. A.), expresses the belief that a large proportion of patients showing arterial hypertension are destined to develop this condition because of an underlying hereditary tendency, and a pathologic continuity throughout their life cycle. In one group of cases in which he made an intensive study, nearly 95 per cent gave such a positive history. In a larger group, 231 cases, in which the history was obtained in a routine manner, a positive history was given by the patient in about 50 per cent. The early life history of these patients indicates that upper respiratory infections were of common occurrence and that many carried diseased tonsils into middle life. The history of patients with arterial hypertension also reveals the fact that they had suffered one of the severe acute infectious diseases. Typhoid and diphtheria were the outstanding diseases in this series. Whether the life history of these persons is read forward, from the juvenile to the senile periods, or whether their life history is read backward, from old age to early childhood, a train of events which seems to determine their whole lives in a constant and almost predestined manner is followed. The frequent infections of early childhood are determined by their lack of immunity rather than by accidental exposure to infection. In the type of individual concerned, these infections continue unabated up to the time of puberty, regardless of hygienic surroundings. With pubescence a differentiation occurs, and the symptom complex that follows is determined by sex. The female manifests the tonsil thyroid syndrome, and subsequent

anatomic, physiologic, immunologic and psychologic changes, which modify her state of health and her productivity as a woman. When involution begins, her menopausal manifestations are exaggerated and about that time hypertension is established. From then on hypertension continues to the time of decompensation. The manner and the time of her decompensation are determined by organ inferiority. In some patients this organ inferiority is the result of previous disease, but in many this organ inferiority is an inherited characteristic. In some families it causes cardiac failure, in others cerebral hemorrhage, and in still others renal failure. The male at the time of pubescence does not develop the tonsil thyroid syndrome. That is why goiter is so much less frequently recognized in the male than in the female. The male develops neurocirculatory asthenia or effort syndrome. To what extent the thyroid gland is involved in the male, at the present time, no one can affirm or deny. The inferior circulatory apparatus of these patients, the intermittent hypertension of early life and the permanent hypertension of later life, all manifest themselves in turn. Thus it is seen that the so-called essential hypertension which is supposedly of unknown origin is in fact the sequel of a train of events covering the whole life of the individual. For this the name sequelar or constitutional hypertension would be more suitable. Those who are familiar with the neurocirculatory asthenia type will realize in what manner his productivity is disturbed and altered. The productive life of the male as seen in the neurocirculatory asthenic patient is altered, just as the reproductive life in the female is altered. When senescence begins, the temporary hypertension of middle life becomes permanently established. From then onward the course of events depends on organ inferiority and environmental factors; sooner or later decompensation follows.

SUGAR SATURATED AMERICANS PRONE TO STOMACH DISEASE

Lack of vitamins and too much sugar in the diet was charged with being responsible for the large amount of stomach and intestinal diseases in this country, in a report just presented by Dr. Seale Harris of Birmingham, Ala., to the American Medical Association.

"Many sugar saturated, vitamin starved Americans, i. e., those who live largely on white flour bread, white potatoes, white rice, lean meats, sugar saturated coffee, and sugar laden desserts, with candy and soft drinks between meals, would seem to be susceptible to ulcer and other abdominal diseases in which infection plays a part," Dr. Harris declared.

Experiments have shown that animals and human beings who are not eating enough vitamins are very susceptible to all kinds of infections. Lowered resistance to infection occurs in the stomach and intestines as well as in the nose and throat. The person whose diet is lacking in vitamins may be subject to frequent colds, pneumonia and tuberculosis, or he may be subject to appendicitis, stomach ulcers, gallbladder disease or colitis.

More than one-fourth of the patients in the general hospitals of the United States are there because they have one of these stomach or intestinal diseases that are due to infection. The increased amount of abdominal diseases is paralleled by the increased sugar consumption in this country. Fifty years ago a man ate, on an average, 26 pounds of sugar a year. Now he eats 106 pounds. That is equivalent to about a teacupful

a day of sugar. White flour, potatoes and other starches have shown a corresponding increase in consumption.

Too much sugar and starch and not enough vitamins is the fault Dr. Harris finds with our national diet. He is at present studying the food habits of ulcer patients in the hope of obtaining further proof of his theory. He reported that "a very large proportion of patients with ulcer belong to the class who overindulge in carbohydrates, particularly the sugar products that are deficient in vitamins."

Ulcer patients should be fed diets rich in vitamins, in order to build up their resistance and prevent recurrences, Dr. Harris recommended. The usual diet now given patients with stomach ulcers is very low in vitamins.

FAMILY COLDS MAY BE DUE TO CARRIER

When colds "run in the family" it is no sign that the family is constitutionally subject to colds. It may be that some member of the family is acting as a carrier, just as some people are typhoid carriers, suggests Dr. P. Watson-Williams in a report to the Practitioner of observations made on ninety consecutive patients. Sometimes one child is known for starting colds among his brothers and sisters. This same child may become immune to colds himself but still harbor cold germs and be able to pass them on to others. If he grows up and has a family, he may still be starting colds in the family, although they are no longer traced to him. The reason for this may be an unsuspected infection of his nasal sinuses, the honey-comb structures back of the nose and eyes. This same infection may be the reason for some children growing a second set of adenoids, when the first ones have been removed with the tonsils, Dr. Watson-Williams thinks. Dr. Watson-Williams also reports a tendency for families that are prone to colds to have infections, in the abdomen, for instance in appendix and gall bladder. The body cells that fight disease germs are weakened by resisting the germs always present in nose and throat and become an easy prey to those germs that find their way to the abdomen.—Science Service.

WHY RHEUMATIC PEOPLE CAN FORECAST STORMS

Explanation of the fact that even when the sky is clear and only a lowered barometric pressure indicates an approaching storm, people with rheumatism "feel it in their bones", and many animals can tell in various ways that it is going to rain, is found in the result of an experiment made by Dr. C. S. Smith of the University of Chicago, which will be reported in the forthcoming issue of the American Journal of Physiology. Restlessness due to water retention under low air pressure is suggested as the cause of such premonitions of storms. In the experiment, dogs and rats were placed in a glass walled tank in which the air had a low barometric pressure. Their diet and water intake and elimination were carefully measured. Very little water was eliminated in proportion to the amount drunk or taken in food. Dr. Smith suggests that in the low barometric conditions preceding a storm, animals retain water in their tissues. Certain animals, including human beings who have rheumatism, are sensitive enough to recognize the restlessness caused by water retention. After a few experiences of storms following the sensation rheumatic persons are able to predict bad weather.—Science Service.